Windows of Opportunity

A statistical profile of substance use among women in their childbearing years in Alberta

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A statistical profile of substance use among women in their childbearing years in Alberta

Alberta Alcohol and Drug Abuse Commission (AADAC)

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Table of Contents

Executive Summary 11
Alcohol Use 12
Drinking Prevalence and Frequency 12
Binge Drinking 12
Heavy Drinking 13
Impact of Alcohol Use 14
Street Drug Use 14
Smoking 15
Related Health and Social Issues 15
Key Findings and Implications 17
Summary 17
Reference List 18

A. Introduction 19

B. General Demographic Profile—Alberta 21
Population 21
Birth Rate 21
Geographic Distribution 21
Ethnocultural Background 21
Income 22

C. Canadian Community Health Survey 23
Alcohol Use 23
Frequency of Alcohol Use 24
Binge Drinking 27
Heavy Drinking 31
Drinking Within the Past Week 33
Use of Alcohol During Pregnancy 36
Impact of Alcohol Use 37
Smoking 38
Self-Perceived Health 42
Self-Rated General Health 42
Perceived Stress 43
Sense of Belonging in the Community 45
Health-Care Utilization 47
Behaviour Changes to Improve Health 49
Social Support 50
Depression 54

D. Vital Statistics, Notice of a Live or Stillbirth and Newborn Record 59

E. Alberta Reproductive Health: Pregnancies and Births 60

Key Reproductive Outcomes 60

Substance Use Patterns Among Pregnant Women 63

Prevalence of Alcohol, Street Drug and Tobacco Use 63

Substance Use and Maternal Age 63

Substance Use and Birth Outcomes 64

F. Maternal Risk Factors in Relationship to Birth Outcome 67

Alcohol Use 67

Street Drug Use 68

Tobacco Use 69

G. Canadian and Provincial Perinatal Health Reports 70

The Canadian Perinatal Health Report 70

Alcohol Use 70

Tobacco Use 70

Birth Outcomes 71

Alberta Perinatal Data 2001 71

Northern and Central Alberta 71

Southern Alberta 72

B.C. Perinatal Data 2000–2001 73

H. Survey Data from the United States 74

Alcohol Use Among Women of Childbearing Age—United States, 1991–1999 74

Substance Abuse and Mental Health Service Administration (SAMHSA) Data 76

Substance Use Behaviour Patterns 76

Treatment for Substance Abuse 82

I. Canadian Campus Survey 86

J. Environics Survey of Awareness of Effects of Alcohol Use During Pregnancy and Fetal Alcohol Syndrome 88

Awareness, Knowledge, and Beliefs About Alcohol Use During Pregnancy 88

Most Important Things Pregnant Women Can Do to Improve Their Health 88

Perceptions of Harm from Different Amounts of Alcohol Use 89

Knowledge of Fetal Alcohol Syndrome (FAS) and Fetal Alcohol Effects (FAE) 91

Recall of Information about the Effects of Alcohol Use During Pregnancy 92

Preferred Information Sources 92
Support for Information Initiatives 93
Drinking Intentions and Behaviours 94
Intentions and Behaviours of Women Currently Pregnant or Anticipating Pregnancy 94
Influence of Support from Male Partners 96
Environics Conclusions About Communications Implications of Their Survey 97

K. Fetal Alcohol Syndrome: A National Survey of Health Professionals 99

L. Canadian Tobacco Use Monitoring Survey (CTUMS) 100

M. Canadian Contraception Study 1998 102

N. Surveys on Violence Against Women, 1993 and 1999 105

O. Profile of High-Risk and Pregnant Women from Program and Research Sources 106
Age 106
Relational and Social Support 107
Income, Education and Employment 107
Motherhood Status 107
Substance Use 107
Other Health-Related, Legal and Social Problems 108

P. Key Findings: Windows of Opportunity for Change 109
Universal Prevention: Windows of Opportunity with Women of Childbearing Age 109
Key Finding 109
Targeted/Selective Prevention: Windows of Opportunity with Pregnant and At-Risk Women 111
Key Finding 1 111
Key Finding 2 112
Indicated Prevention: Windows of Opportunity with High-Risk Women 113
Key Finding 113
Implication 113
Windows of Opportunity in Research 113
Key Finding 1 113
Key Finding 2 115
Summary 115

References 116

Appendix 1 119

Table of tables

TABLE B1: Number of Live Births — Alberta 21
TABLE B2: Population Groups and Sex — Alberta 21
TABLE B3: Prevalence of Low Income Among Families with Children Aged 17 and Under — Alberta 22
TABLE B4: Household Income Ranges by Family Type — Alberta 22
TABLE C1: Prevalence of Drinking 24
TABLE C2: Frequency of Having Five or More Drinks on One Occasion Once a Month or More 29
TABLE C3: Frequency of Having Five or More Drinks on One Occasion Once a Week or More 29
TABLE C4: Frequency of Regularly Drinking Greater Than 12 Drinks per Week 32
TABLE C5: Frequency of Drinking Greater Than 12 Drinks in the Past Week 32
TABLE C6: Frequency of Drinking At All in the Past Week 34
TABLE C7: Reported Number of Drinks in the Past Week — Alberta 34
TABLE C8: Reported Number of Drinks in the Past Week — Canada 35
TABLE C9: Reported Number of Drinks in the Past Week — British Columbia 35
TABLE C10: Reported Alcohol Use During Last Pregnancy 36
TABLE C11: Indicators of Alcohol Dependence by Sex and Pregnancy Status — Alberta 38
TABLE C12: Frequency of Smoking 41
TABLE C13: Frequency of Non-smoking 41
TABLE C14: Self-Rated General Health — Alberta 42
TABLE C15: Self-Rated General Health — Canada 43
TABLE C16: Self-Rated General Health — British Columbia 43
TABLE C17: Self-Rated Life Stress — Alberta 44
TABLE C18: Self-Rated Life Stress — Canada 44
TABLE C19: Self-Rated Life Stress — British Columbia 45
TABLE C20: Self-Rated Work Stress — Alberta 45
TABLE C21: Sense of Belonging in the Community — Alberta 46
TABLE C22: Sense of Belonging in the Community — Canada 46
TABLE C23: Sense of Belonging in the Community — British Columbia 47
TABLE C24: Health-Care Utilization — Alberta 47
TABLE C25: Health-Care Utilization — Canada 48
TABLE C26: Health-Care Utilization — British Columbia 48
TABLE C27: Changes Made to Improve Health — Alberta 49
TABLE C28: Changes Made to Improve Health — Canada 50

TABLE C29: Changes Made to Improve Health — British Columbia 50
TABLE C30: Types of Social Support Received Most or All of the Time — Alberta 52
TABLE C31: Types of Social Support Received Most or All of the Time by Pregnant Women 53
TABLE C32: Felt Depressed for Two Weeks or More in the Past Year 56
TABLE C33: Depression Scores by Pregnancy Status, Sex, and Drinking Risk — Alberta 57
TABLE C34: Depression Scores by Pregnancy Status, Sex, and Drinking Risk — Canada 57
TABLE C35: Depression Scores by Pregnancy Status, Sex, and Drinking Risk — British Columbia 58
TABLE C36: Selected Licit Drug Use by Pregnancy Status and Sex — Canada 58
TABLE D1: Substance Use During Pregnancy — Alberta 59
TABLE H1: Alcohol Use Trends in U.S. Women Between 1991 and 1999 75
TABLE I1: Binge Drinking During One (Fall) Semester — Canada 86
TABLE I2: Binge Drinking During One (Fall) Semester — by Region 87
TABLE J1: Behaviour Changes Believed Most Important for Having a Healthy Baby 89
TABLE J2: Beliefs About Drinking Small to Moderate Amounts of Alcohol During Pregnancy 90
TABLE J3: Beliefs About Drinking Specific Amounts of Alcohol During Pregnancy 91
TABLE J4: Best and Additional Sources of Information on FAS and Other Effects of Alcohol Use During Pregnancy 93
TABLE J5: Support for Information About Risks of Alcohol Use During Pregnancy 94
TABLE L1: Children's Exposure to Environmental Tobacco Smoke (ETS) in the Home 100
TABLE L2: Smoking Prevalence and Patterns Among Albertans Aged 15-44 101
TABLE L3: Smoking Prevalence and Patterns Among British Columbians Aged 15-44 101
TABLE L4: Smoking Prevalence and Patterns Among Canadians Aged 15-44 101

Table of figures

FIGURE C1: Frequency of Drinking Alcohol by Sex — Alberta 25
FIGURE C2: Frequency of Drinking Alcohol by Current Pregnancy Status — Alberta 25
FIGURE C3: Frequency of Drinking Alcohol by Age Groupings — Alberta 26
FIGURE C4: Frequency of Drinking Alcohol by Household Income Estimate — Alberta 27
FIGURE C5: Frequency of Having Five or More Drinks by Sex — Alberta 28
FIGURE C6: Frequency of Having Five or More Drinks by Current Pregnancy Status — Alberta 28
FIGURE C7: Frequency of Having Five or More Drinks by Age Groupings — Alberta 30
FIGURE C8: Frequency of Having Five or More Drinks by Household Income Estimate — Alberta 31
FIGURE C9: Frequency of Heavy Drinking (more than 12 Drinks) in the Past Week — Alberta Women by Age Groupings 33
FIGURE C10: Frequency of Heavy Drinking (more than 12 Drinks) in the Past Week — Alberta Women by Estimated Household Income 33
FIGURE C11: Number of Drinks Consumed by Pregnant Women in the Past Week — Alberta by Age Groupings 35
FIGURE C12: Reported Use of Alcohol During Last Pregnancy by Income — Alberta 36
FIGURE C13: Type of Smoker by Sex — Alberta 39
FIGURE C14: Type of Smoker by Pregnancy Status — Alberta 39
FIGURE C15: Type of Smoker by Age Groupings — Alberta 40
FIGURE C16: Type of Smoker by Household Income — Alberta 40
FIGURE C17: Felt Depressed for Two Weeks or More in the Past Year by Sex — Alberta 54
FIGURE C18: Felt Depressed for Two Weeks or More in the Past Year by Age — Alberta 55
FIGURE C19: Felt Depressed for Two Weeks or More in the Past Year by Pregnancy Status — Alberta 55
FIGURE C20: Felt Depressed for Two Weeks or More in Past Year by Household Income Estimate — Alberta 56
FIGURE E1: Fertility (live births per 1000 women) 60
FIGURE E2: Maternal Age (at delivery) 61
FIGURE E3: Congenital Anomalies (per 1000 women) 61
FIGURE E4: Low Birth Weight (live births less than 2500 g. per 100 live births) 62

FIGURE E5: Preterm Births (live births with gestation period of 37 weeks or less, per 100 live births) 62
FIGURE E6: Small for Gestational Age Rate (birth weight below the 10th percentile of appropriate for gestational age infants, per 100 live singleton births) 63
FIGURE E7: Average Maternal Age and Substance Use During Pregnancy in Alberta 1998–2000 Combined 64
FIGURE E8: Average Birth Weight and Substance Use During Pregnancy in Alberta 1998–2000 Combined 65
FIGURE E9: Low Birth Weight and Substance Use During Pregnancy in Alberta 1998–2000 Combined 65
FIGURE E10: Preterm Births and Substance Use During Pregnancy in Alberta 1998–2000 Combined 66
FIGURE F1: Percentage of Mothers Indicating Some Alcohol Use During Pregnancy, by Age at Time of Delivery, 1994–1996 67
FIGURE F2: Percentage of Mothers Reporting Illicit Street Drug Use During Pregnancy, by Age at Time of Delivery, 1994–1996 68
FIGURE F3: Percentage of Women Smoking During Pregnancy by Age, 1994–1996 69
FIGURE H1: Drinking Patterns of U.S. Women by Pregnancy Status and Age 78
FIGURE H2: Street Drug Use Patterns of U.S. Women by Pregnancy Status and Age 78
FIGURE H3: Substance Use Patterns of U.S. Women by Trimester 79
FIGURE H4: U.S. Women Binge Drinking by Age and Pregnancy Status 80
FIGURE H5: U.S. Women Illicit Drug Use by Age and Pregnancy Status 81
FIGURE H6: Binge Drinking Among Underage and Legal Age U.S. Women and Males 81
FIGURE H7: Primary Substance of Abuse for Pregnant and Non-Pregnant U.S. Women in Treatment 82
FIGURE H8: Substance Abuse Treatment Admissions Among Pregnant and Non-Pregnant U.S. Women 83
FIGURE H9: Primary Substance of Abuse for Dually and Non-Dually Diagnosed U.S. Women in Treatment 84
FIGURE J1: Intentions Regarding Alcohol Use During Pregnancy for Total Sample of Respondents 95
FIGURE J2: Behaviours or Intentions of Women Who Are Either Currently Pregnant or Anticipating Future Pregnancy 96
FIGURE J3: Intentions of Male Partners for Support and Drinking Behaviour During a Woman's Pregnancy 97
FIGURE M1: Condom and Birth Control Pill Use by Age Within Marital Status 103

Executive Summary

The use of alcohol, tobacco and street drugs by women is gaining increased attention in Canada. In the past, substance use was more often viewed as an issue for men; consequently, specific substance use patterns and treatment needs of women were often overlooked. Research, program planning and policy development are increasingly guided by considerations of sex (biological) differences in addiction and substance use, and by gender (social) influences on issues of substance use and treatment potential.

Substance use during pregnancy can have long-term effects on children—including developmental delays, learning and behavioural difficulties, and lifelong disabilities. The most commonly known harmful effect is fetal alcohol spectrum disorder (FASD). Substance use also affects the woman herself through increased risk of various acute and chronic illnesses, and safety concerns related to intoxication. Women who use substances may also be experiencing other health issues and problems. These include mental health issues and experiences of violence. Substance use can also contribute to social and legal problems for women (particularly mothers), such as family breakdown or child apprehension.

In this report, we present a statistical profile of substance use patterns among Alberta women of childbearing years (ages 18 to 44). In most cases, data are analyzed by sex, pregnancy status, age, and household income. Where data permit, there are comparisons to British Columbia and Canada. We present additional statistics on issues that could inform substance abuse prevention, treatment and policies. These include treatment choices, barriers, motivators to reduce or quit during pregnancy, lifestyle changes before and during pregnancy, planned and unplanned pregnancies, community attitudes toward women and substance use, and awareness and attitudes of FASD. The main data source is the 2001 Canadian Community Health Survey. Other sources include Alberta reproductive health studies, perinatal databases and public opinion research. The report also includes some United States data on selected issues such as drinking patterns of young adults.

Note: Except where otherwise noted, information in this summary is from analysis of data from the Canadian Community Health Survey 2001 (CCHS, Cycle 1.1) and is limited to ages 18 to 44.[4] Many of the CCHS questions use a 12-month time frame. Women who were pregnant at the time of the survey were only pregnant for a portion of that time frame. Thus, reported rates of substance use among pregnant women may be higher than if the question had focused more narrowly on substance use *during* the pregnancy.

Alcohol Use

Drinking Prevalence and Frequency

CCHS respondents were asked about their drinking behaviour over the past 12 months.

- Among adults 18 to 44 years of age in Alberta, 79.9% of women reported drinking within the past 12 months, versus 89.3% of men.
- Of Alberta women who were pregnant at the time of the survey, 69.3% reported drinking within the past 12 months, versus 80.4% of women who were not pregnant.
- Only 2.3% of Alberta women who were pregnant at the time of the survey reported drinking in the week before the survey, versus 52.3% of Alberta women who were not pregnant.
- At around 31%, women in both the youngest (18 to 20) and oldest (31 to 44) age groups were more likely than the two age groups in between to drink one to six times per week (24% to 26%). Twenty-six- to 44-year-olds were most likely to report daily drinking, though the percentages were small (2% to 3%). The pattern of more frequent drinking among younger and older women fits with U.S. research showing more frequent drinking among both early college-age women and older women.
- Alberta women in the poorest households (less than $10,000 per year) were most likely to drink infrequently (less than once per month) (44.2%). Women in the highest income bracket ($40,000 or more per year) were most likely to drink at least four times a week, though this frequency of drinking was rare (4.6%).
- The percentage of Alberta women who reported drinking during their last pregnancy was 9.2%.
- The percentage of women who drank during their last pregnancy was markedly higher for the two highest income groups (40.5% for $80,000 or more and 23.1% for $60,000 to $79,999). Percentages in the lower income brackets ranged from 0% to 12.7%.

Preliminary data from 2002 shows that 4% of pregnant women used alcohol during their pregnancy, versus 22.1% who used tobacco and 2.2% who used illicit drugs.[2]

Binge Drinking

Binge drinking is generally defined as five or more drinks on one occasion. CCHS respondents were asked about their binge drinking behaviour *over the past 12 months*. Although there is no accepted safe level of drinking during

pregnancy, binge drinking is especially risky in terms of adverse pregnancy outcomes.

- Overall, men are more likely than women to binge drink. In Alberta, men are about twice as likely as women to binge drink once per month or more (39.2% versus 18.1%), and are about three times as likely to binge drink once per week or more (14.6% versus 4.8%).
- One in ten (10.3%) Alberta women who were pregnant at the time of the survey reported binge drinking once per month or more, versus 18.4% of Alberta women who were not pregnant.
- Less than one per cent (0.9%) of Alberta women who were pregnant at the time of the survey reported binge drinking once per week or more, versus 5.0% of Alberta women who were not pregnant.
- Binge drinking occurred most frequently among younger women. Among Alberta women aged 18 to 20, 14.1% reported binge drinking once per week or more, versus 6.2% in the 21 to 25 year age group, and about 3% in each of the two older groups (26 to 30 and 31 to 44 years of age).
- Alberta women in households with an income of less than $10,000 per year were most likely to binge drink once per week or more (9.2%), versus 5.7% in the $10,000 to $19,999 income group, and 4% to 5% in income groups over $20,000.

Heavy Drinking

In the CCHS, heavy drinking is defined as having ever regularly consumed more than 12 drinks per week, though "regularly" was not defined in the survey. Heavy drinking is associated with increased risk of adverse pregnancy outcomes.

- Overall, Alberta men are four times more likely than Alberta women to regularly drink more than 12 drinks per *week* (44.2% versus 10.5%).
- Among Alberta women who were pregnant at the time of the survey, 12.1% reported heavy drinking. However, it is not known if this drinking occurred before they became pregnant. There were no clear age or income differences. Of Alberta women who were not pregnant, 10.4% reported heavy drinking.
- No Alberta women who were pregnant at the time of the survey reported drinking more than 12 drinks in the *week* before the survey, versus 4.5% of Alberta women who were not pregnant.

- Some researchers define heavy drinking for women as consuming more than *nine* drinks per week. This lower cut-off is used to account for sex differences in metabolism of alcohol. Less than one per cent (0.8%) of Alberta women who were pregnant at the time of the survey reported having more than nine drinks in the *week* before the survey, versus 8.1% of Alberta women who were not pregnant.

Impact of Alcohol Use

Those who reported regular drinking in the CCHS were asked questions from an alcohol screening instrument to determine the impact of alcohol on their lives.

- Alberta women who were pregnant at the time of the survey were much more likely to say drinking had interfered with their lives than Alberta women who were not pregnant. For example, 28.1% of women who were pregnant at the time of the survey reported having emotional problems due to alcohol use versus 9.9% of women who were not pregnant.
- Overall, while women were more likely to report that drinking affected their mental health (9.9% for women versus 7.0% for men), men more often reported that drinking affected their risk of physical injury (17.7% for men versus 7.6% for women).
- Of Alberta women who had ever regularly consumed more than 12 drinks per week, 51.7% of those who were pregnant at the time of the survey had reduced or quit drinking because of *pregnancy* versus 13.4% of women who were not pregnant.

Street Drug Use

According to Alberta Health and Wellness, 1.7% of Alberta women who had a live birth between 1998 and 2000 used street drugs during pregnancy. Women who used street drugs during pregnancy were younger and more likely to have low-birth-weight or preterm babies.[1]

Canadian population health research on street drug use is scarce. Research by the Substance Abuse and Mental Health Services Administration (SAMHSA) in the U.S. shows that 3% of pregnant women aged 15 to 44 used a street drug in the month before the survey. Pregnant women were about half as likely as non-pregnant women to use street drugs. However, among 15- to 17-year-olds, pregnant and non-pregnant women had similar rates of drug use (approximately 13%).[14]

Smoking

CCHS respondents were asked about their smoking behaviour over the past 12 months.

- The overall smoking rate for Alberta women aged 18 to 44 is 30.3%. For Alberta men of the same age, the rate is 37.4%.
- Alberta women who were pregnant at the time of the survey were roughly half as likely as non-pregnant women to smoke *daily* (13.9% versus 25.2%).
- The highest rates of *daily* smoking among Alberta women were in the two lowest income groups: 36.6% with a household income of less than $10,000 and 37.3% with a household income of $10,000 to $19,999. The relationship between lower incomes and higher smoking rates is more clear-cut than the relationship between income level and alcohol use.

According to Alberta Health and Wellness, 25.7% of Alberta women who had a live birth between 1998 and 2000 reported smoking at some point during their pregnancy. Women who smoked during pregnancy were more likely to have low-birth-weight or preterm babies.[1]

Related Health and Social Issues

The research team also examined perceptions, health practices, health risks, and use of health-care services by women in Alberta.

- A study undertaken by Environics Research Group in 2000 found that most Canadians are aware of the risks of alcohol use during pregnancy: 98% believe that the more alcohol a pregnant woman drinks, the more likely that the baby will be harmed, and 89% believe that alcohol use during pregnancy can lead to lifelong disabilities in a child. However, men in general, and women who drink more heavily are more likely to believe that alcohol consumption during pregnancy is safe.[5]
- The following are findings from the Canadian Community Health Survey:
  - Alberta women who were not pregnant at the time of the survey (30.1%) and Alberta men (26.1%) were more likely to feel stressed than Alberta women who were pregnant (15.7%).
  - Alberta women who were pregnant at the time of the survey were less likely to say that they needed health care but did not receive it (10.7%) than either Alberta women who were not pregnant (18.2%) or Alberta men (14.4%).

- Depression levels, as indicators of concurrent mental health risk, were identifiable in the survey: Approximately 17% of Alberta women reported moderate or high depression, with little difference between women who were pregnant at the time of the survey and those who were not. Men reported concern with depression less often (10.4%).
- A number of women did not perceive that they would have *practical* support if they really needed it, such as receiving help when they were sick. Over one-sixth of Alberta women who were pregnant at the time of the survey and one-quarter of Alberta women who were not pregnant felt this way.

- The following statistics relate to violence against women:
  - Alberta studies have linked violence against girls and women to their entry into prostitution,[9] to their use of alcohol and other drugs, and to help-seeking behaviour.[12]
  - Violence against women is common during pregnancy. Twenty-one per cent of women in Canada who reported being abused by an intimate partner said they were abused during pregnancy.[13]
- The following are findings of the Canadian Contraception Study, 1998:[7]
  - The use of condoms and birth control pills was almost twice as high among unmarried women than among married women, and condoms were more popular among unmarried teens. Among those who had used condoms, about 60% had also used some other method.
  - Among women presently using oral contraceptives, 35% reported having two or more sexual partners during the past two years.
  - More than a quarter of women believed that having only one partner, or knowing one's partner well, eliminated the need for condoms.
  - Among respondents who had had intercourse in the previous six months, 29% had not used any contraception (only about a third of these women were pregnant or trying to conceive). In general, consistent use of contraception over the previous six months was lower among those with less education.
  - Unmarried women (69%) were more likely to regularly use most forms of contraception than married women (54%). However, during the previous six months, only 60% of 15- to 17-year-old unmarried teens said they always used contraception. Younger women were also more likely to use unreliable contraceptive methods. For example, withdrawal was used by 22% of unmarried 15- to 17-year-olds and 13% of unmarried 18- to 24-year-olds, versus 9% of women overall.

- The 1998 Canadian Campus Survey[5] demonstrated that rates of binge drinking among Canadian students were high; overall, 62.7% reported having five or more drinks at least once during the fall semester (56.1% of women, 70.6% of men). Over one-third (34.8%) reported having eight or more drinks at least once during the same time frame (25.2% of women, 46.5% of men).
- While variable in scope and types of information gathered, information obtained from Alberta and other Canadian and U.S. programs serving high-risk pregnant women demonstrates clearly that the concerns facing these women are considerably more complex than substance use alone. These include sole parenting, children in custody, low income, and a constellation of other health, legal and social problems such as unstable housing, exposure to violence and abuse, justice system involvement, and concurrent physical and mental health problems.[3,6,10,11,15,16]

Key Findings and Implications

- Substance use by women in their childbearing years is common, and risky drinking patterns, while less common, are found throughout the age and income spectrum. Therefore, routine screening of all women of childbearing age is indicated, and public awareness campaigns should play an important educative role.
- The vast majority of pregnant women do not use alcohol during pregnancy, make efforts to improve their health, and find the support they need. Because women are clearly open to changes in substance use behaviour during pregnancy, this is a brief but excellent opportunity to influence women.
- A profile emerged of groups at higher risk. Because broad public campaigns demonstrate less effectiveness for at-risk groups, targeted campaigns are needed.
- Specific, focused support is needed for those women who present with a constellation of other factors that interact with alcohol to compromise their own and their children's health.
- Information-gathering about substance use has limitations in its current forms and leads to seemingly inconsistent results and underreporting.

Summary

This report presents a statistical profile of substance use among Alberta women of childbearing years (ages 18 to 44), supplemented by other health-related information that contributes to our understanding of women and substance use. Researchers reviewed data from national surveys/reports and perinatal databases to prepare a profile that compares rates of men with those of pregnant

and non-pregnant women in Alberta, B.C. and Canada. The information presented in this report has implications for policy and practice related to women and substance use across Canada.

A key point reminds us that women already make positive efforts to protect their health and the health of their children, and we are challenged to find ways to enhance this effort. Other findings direct our attention to some important hidden groups (such as women with higher incomes, older and younger women), and to the importance of addressing the social support needs of the women we serve.

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A. Introduction

The complex issue of substance use by women is gaining increased attention in Canada. In the past, practices such as alcohol overuse and tobacco use had been associated with males, while female patterns of substance use and female-oriented treatment needs were often ignored. Current research and practice stress the need to investigate in more depth women's patterns and profiles of substance use. Research, program planning and policy development are increasingly guided by considerations of sex (biological) differences in addiction and substance use, and by gender (social) influences on issues of substance use and treatment methods. Often, consideration of sex and gender differences is prompted by new requirements in research ethics and in government policy.

Substance use often co-occurs with other conditions, such as poverty/low income, low education, lone parenthood, poor housing, and discrimination. Nonetheless, while tobacco use is increasingly linked to low socio-economic status, problem drinking is found across the income spectrum. Not surprisingly, substance use also presents in conjunction with other health and social issues and problems, such as mental health concerns, infectious diseases, and experiences of violence.

Often, substance use by women has a direct effect on children. In some cases, substance use by pregnant women can lead to health issues for both the fetus and the woman. The likelihood of low birth weight, premature birth and stillbirth is increased through the ingestion of alcohol, tobacco and other drugs during pregnancy. Research indicates evidence of lifelong effects on children as a result of substance use during pregnancy, including behavioural difficulties and learning disabilities (e.g., fetal alcohol spectrum disorder). Substance use while raising children can also present serious health and social problems for both mother and child. For example, exposure to environmental tobacco smoke can create ongoing respiratory problems, and illicit drug use may lead to social and legal problems for mothers, such as child apprehension.

For all of these reasons, it is critical to develop a comprehensive profile of women's substance use in an attempt to trace the interconnections between, and analyze the influences of, the many other variables and conditions that lead to substance use by women.

The research team synthesized international, national and provincial survey data to develop a statistical profile of Alberta women of childbearing years, specifically those who use substances, and including those who are pregnant. For the purposes of this report, "women of childbearing years" has been defined as women aged 18 to 44, although women under 18 are considered in some instances. Relying heavily on the *Canadian Community Health Survey 2001* (Statistics Canada, 2002b), in concert with data collected from a variety of

other surveys, we hope to provide a more comprehensive picture of Alberta's situation regarding substance use and women. The benefit of gathering a composite view from various sources of data is that all have particular strengths and weaknesses, and this approach enables us to choose the best available information.

B. General Demographic Profile—Alberta

Population

According to the most recent Canada census, there were 621,870 women in Alberta aged 18 to 44 in 2001 (Statistics Canada, 2002a).

Birth Rate

Alberta Vital Statistics data for the last three years were as follows (Alberta Health and Wellness and Alberta Medical Association, 2002):

TABLE B1: Number of Live Births — Alberta

1998	1999	2000
37,527	37,771	36,613

Geographic Distribution

Of Alberta women, 32.1% live in Edmonton, 34.2% in Calgary, and the remainder live outside these two major cities. (Statistics Canada, 2002a).

Ethnocultural Background

The most common identifications of ethnocultural background in Alberta were as follows (Statistics Canada, 2003a):

TABLE B2: Population Groups and Sex — Alberta

	Total-Sex	Male	Female
White	83.4%	83.7%	83.0%
Aboriginal	5.2%	5.1%	5.4%
Chinese	3.2%	3.1%	3.3%
South Asian	2.3%	2.3%	2.2%
Filipino	1.1%	0.9%	1.3%
Black	0.9%	0.9%	0.8%
Southeast Asian	0.8%	0.8%	0.8%
Latin American	0.6%	0.6%	0.6%
Other and multiple responses	2.6%	2.6%	2.5%
Total - Population groups	100%	100%	100%
n=2,941,150			

Income

The most recent Canada census shows the following statistics related to women's income (Statistics Canada, 2003b):

- Of women aged 15 to 19, 10% had no source of income.
- Of women aged 25 to 44, 1% had no source of income.
- Average income for women aged 15 to 19 was $8,930, versus $12,649 for men.
- Average income for Alberta women aged 25 to 44 was $25,572, versus $45,325 for men.

Of all families in Alberta with a single female parent, almost half (44.0%) are low income, versus 17.4% of two-parent families (Statistics Canada, 2003c).

TABLE B3: Prevalence of Low Income Among Families with Children Aged 17 and Under — Alberta

Female lone parent families	Couple families (married or common-law)
44.0%	17.4%

According to the census, single-parent families are also overrepresented in the lowest income bracket: Of all single-parent households, 25% earn less than $20,000 per year, versus 4.3% of two-parent households (Statistics Canada, 2003d) (Table B4).

TABLE B4: Household Income Ranges by Family Type — Alberta

	Under $20,000	$20,000 – $39,999	$40,000 or over
Couple-family households with children	4.3%	10.9%	85.3%
Lone-parent households	25.0%	32.5%	42.5%
All families	15.0%	21.7%	63.3%

C. Canadian Community Health Survey

All information in this section is from custom tabulation of data (British Columbia Ministry of Health Services, 2003) from the *Canadian Community Health Survey (CCHS), Cycle 1.1* (Statistics Canada, 2002b), and is limited to **ages 18 to 44**.

Many of the CCHS questions use a 12-month time frame. (For example, "During the past 12 months, how often did you drink alcoholic beverages?") Women who were pregnant at the time of the survey were only pregnant for a portion of the 12 months preceding the survey. There is no way to establish whether they drank during the months of their pregnancy. Thus, reported rates of substance use among pregnant women may be higher than if the question had focused more narrowly on substance use *during* the pregnancy. Despite the limitations of the 12-month time frame for many of the survey questions, it is still instructive to examine the relationship between pregnancy and specific patterns of alcohol use.

"Pregnant" refers to women who were pregnant at the time of the survey. "Non-pregnant" refers to women who were not pregnant at the time of the survey.

Because detailed statistical breakdowns for many of the substance use variables (e.g., drinking or street drug use among pregnant women) have small sub-sample sizes, estimates are prone to variability and should be interpreted with caution.

Alcohol Use

In this section, we examine the following areas, analyzed by sex, pregnancy status, age and household income for people aged 18 to 44. Where appropriate, Alberta data are compared with British Columbia (B.C.) and Canadian data.

- Frequency of Alcohol Use
- Binge Drinking
- Heavy Drinking
- Drinking Within the Past Week
- Use of Alcohol During Pregnancy
- Impact of Alcohol Use
- Smoking

From the CCHS, the following additional areas are considered in order to provide a more complete picture of the health of pregnant women, beyond their use of alcohol and tobacco.

- Self-Perceived Health
- Health Care Utilization
- Changes in Health Behaviours
- Social Support
- Depression

Frequency of Alcohol Use

In Alberta, 89.3% of men aged 18 to 44 reported drinking alcohol *within the last 12 months*, versus 79.9% of women.

We are aware that substance use by women, particularly pregnant women, is underreported. In a survey such as the CCHS, questions about drinking behaviour are left unanswered by women more frequently than by men. For example, in reporting the number of drinks consumed in the past week, approximately 20% of women did not answer the question; the percentage of women who did not answer and were pregnant at the time of the survey was closer to 30%, versus approximately 15% of men who did not answer. This may be due to societal stigma, and suggests that findings should be interpreted with caution.

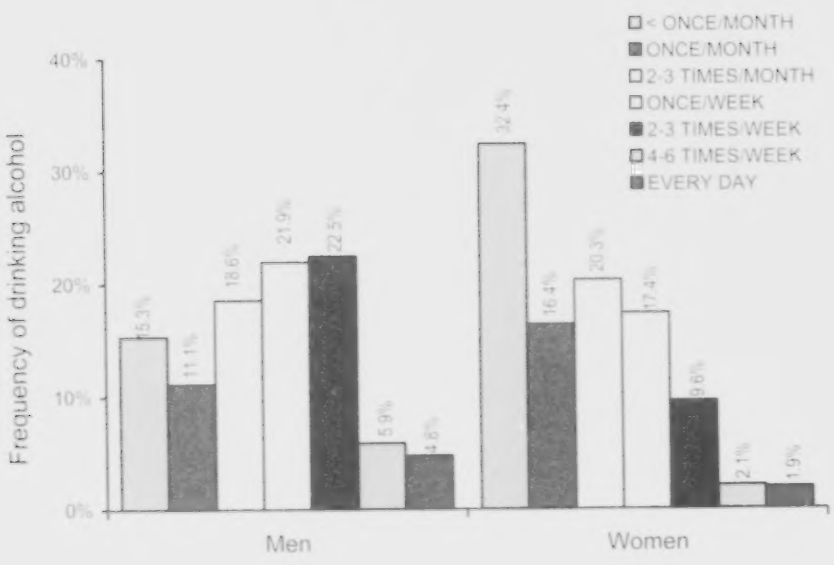
Among Alberta women who were pregnant at the time of the survey, 69.3% reported drinking alcohol *within the last 12 months*, versus 80.4% of Alberta women who were not pregnant (Table C1).

TABLE C1: Prevalence of Drinking

	Alberta	Canada	B.C.
Pregnant women	69.3%	72.8%	72.5%
Non-pregnant women	80.4%	82.3%	79.8%
All women	79.9%	81.9%	79.6%
Men	89.3%	88.0%	85.9%

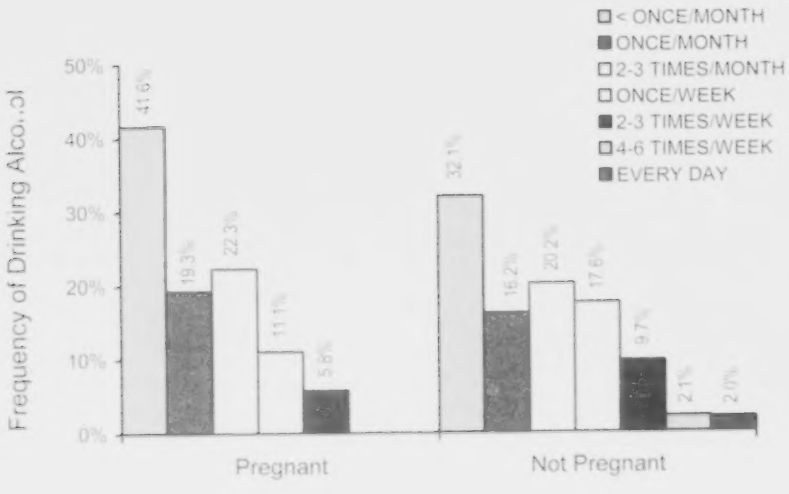
As shown in Figure C1, men tend to drink more frequently than women. These differences were most apparent among those who drank *two to three times per week, or more*. This is consistent with other survey results and research studies in the addictions field (Canada Centre on Substance Abuse, and Centre for Addiction and Mental Health, 1999; Health Canada, 1996).

FIGURE C1: Frequency of Drinking Alcohol by Sex — Alberta



As indicated in Figure C2, no women who were pregnant at the time of the survey drank *more than three times per week*, versus a small percentage of women who were not pregnant (4.1%). Almost twice as many women who were not pregnant drank *two to three times per week* (9.7% versus 5.8%). Also, 17.6% of women who were not pregnant drank *once per week*, as compared with 11.1% of women who were pregnant. Thus, women who were pregnant at the time of the survey were considerably less likely to drink on a regular basis (at least *once per week*) than women who were not pregnant.

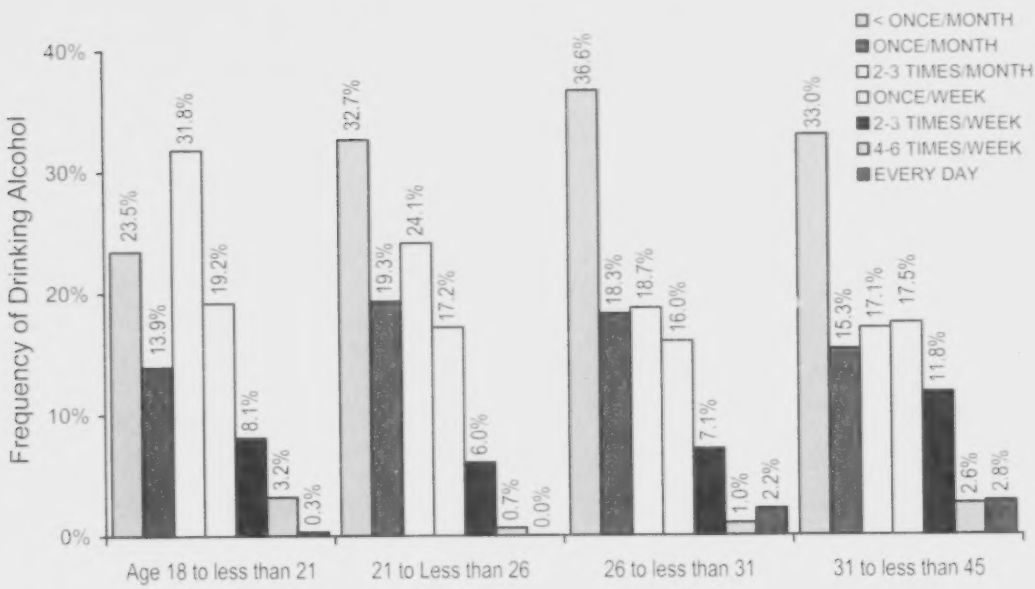
FIGURE C2: Frequency of Drinking Alcohol by Current Pregnancy Status — Alberta



When drinking patterns are examined by age group, it appears that the youngest women (aged 18 to 20) were least likely to drink *less than once per month* (23.5% versus 32% to 37% for the other age groups) (Figure C3). However, this does not mean that the youngest women were the most frequent drinkers.

At around 31%, women in both the youngest (18 to 20) and oldest (31 to 44) age groups were more likely to drink between *one and six times per week* than the two age groups in between (24% to 26%). Twenty-six- to 44-year-olds were most likely to report *daily* drinking, though the percentages were small (2% to 3%). The pattern of more frequent drinking among younger and older women fits with U.S. research showing more frequent drinking among both early college-age women and older women, as discussed in Section H—Survey data from the United States.

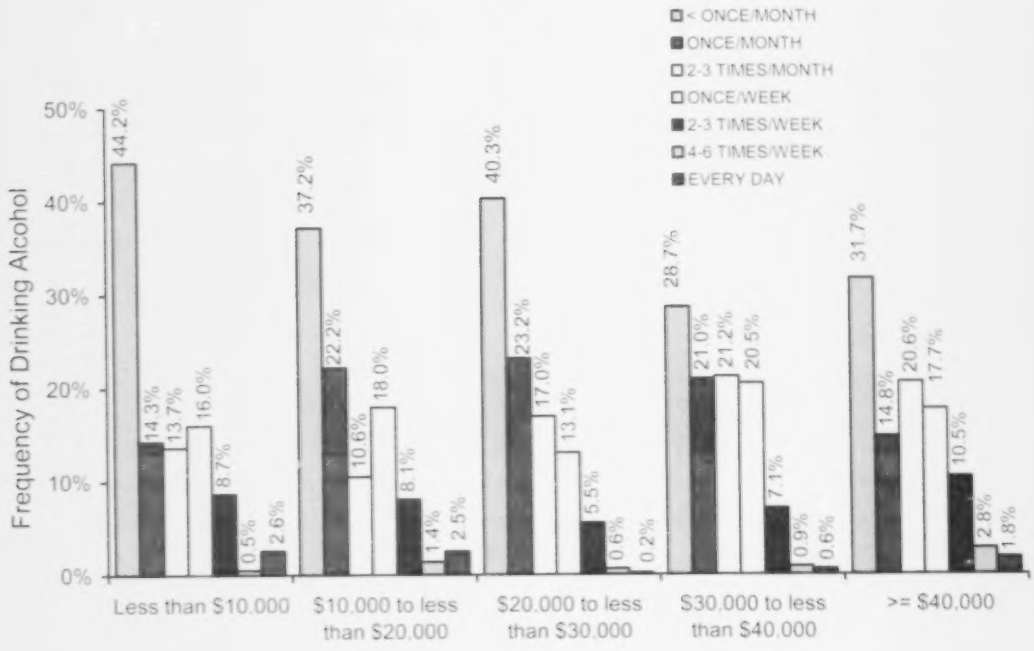
FIGURE C3: Frequency of Drinking Alcohol by Age Groupings — Alberta



As seen in Figure C4, women from the poorest households (under $10,000) were most likely to drink infrequently (44.2% drink *less than once per month*). This may be a function of the cost of alcohol at this very low level of household income. Women in the highest income bracket ($40,000 or more per year) were most likely to drink *at least four times per week*, though this frequency of drinking was rare (4.6%). This finding is consistent with survey results from a 2000 Environics survey discussed later in this report (Environics Research Group, 2000). Those in the middle income group ($20,000 to $29,000) were least likely to drink either *once per week* or *two to three times per week* compared with those in the lower income groups (less than $20,000) and higher income groups (more than $30,000). Sample sizes in the CCHS were not sufficient to allow us to explore differing reasons for higher frequency of

drinking among lower and higher income groups. Among those with an income of $20,000 to $39,999, *daily* drinking is infrequent (0.2% and 0.6%).

FIGURE C4: Frequency of Drinking Alcohol by Household Income Estimate — Alberta



Binge Drinking

Reporting only the frequency of drinking (as above) does not provide a complete picture of drinking behaviours, in that it does not indicate the *amount* of alcohol consumed. Although the optimal recommendation for pregnant women is to abstain, there are different levels of risk associated with different types and levels of consumption. Binge drinking, generally defined as having *five or more drinks on one occasion*, is especially risky in terms of adverse pregnancy outcomes.

Overall, men are more likely than women to binge drink. In Alberta, men are about twice as likely as women to binge drink *once or more per* ***month*** (39.2% versus 18.1%), and are about three times as likely to binge drink *once or more per* ***week*** (14.6% versus 4.8%) (Figure C5).

FIGURE C5: Frequency of Having Five or More Drinks by Sex — Alberta

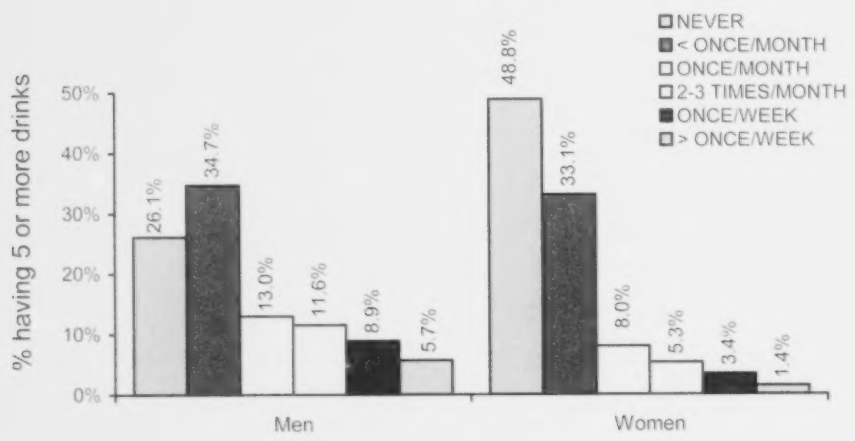


Figure C6, Table C2 and Table C3 shows the frequency of binge drinking by pregnancy status. Over 10% (10.3%) of Alberta women who were pregnant at the time of the survey drank *five or more drinks* at a time *once or more per month*, versus 18.4% of women who were not pregnant. Less than 1% (0.9%) of women who were pregnant at the time of the survey reported binge drinking *once or more per week*, versus 5% of women who were not pregnant.

FIGURE C6: Frequency of Having Five or More Drinks by Current Pregnancy Status — Alberta

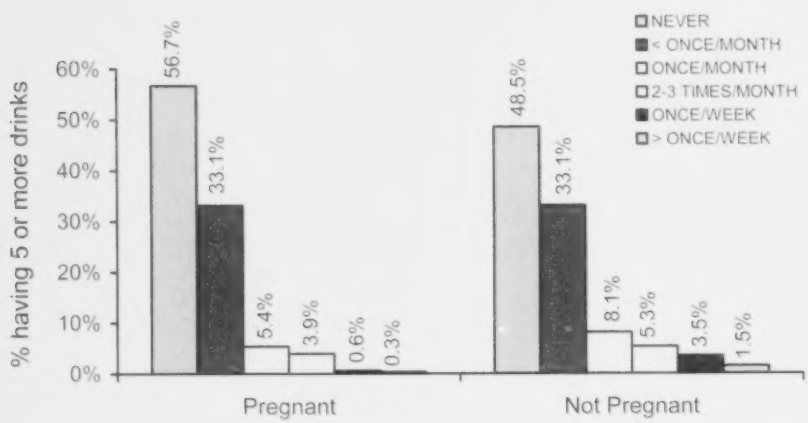


TABLE C2: Frequency of Having Five or More Drinks on One Occasion Once a Month or More

	Alberta	Canada	B.C.
Pregnant women	10.3%	9.9%	8.9%
Non-pregnant women	18.4%	16.4%	18.3%
All women	18.1%	16.1%	18.0%
Men	39.2%	35.8%	34.5%

As shown in Table C3, Alberta women who were pregnant at the time of the survey were much less likely to report that they drank *five or more drinks* on one occasion *once or more per week* (0.9%) than women who were pregnant in the rest of Canada (2.1%) or in B.C. (4.8%). Across the three jurisdictions, men were three or more times likely to report binge drinking *once or more per week*. For example, in Alberta the rate for men is 14.6% and for women it is 4.8%.

TABLE C3: Frequency of Having Five or More Drinks on One Occasion Once a Week or More

	Alberta	Canada	B.C.
Pregnant women	0.9%	2.1%	4.8%
Non-pregnant women	5.0%	4.2%	4.0%
All women	4.8%	4.1%	4.0%
Men	14.6%	14.4%	12.0%

Among women of childbearing age (18 to 44), binge drinking occurred more frequently in the younger years, as shown in Figure C7. For example, 14.1% of Alberta women aged 18 to 20 binge drank *once or more per week*, versus 6.2% in the 21-to-25 age group. In the two oldest age groups (26 to 44), only about 3% of women reported binge drinking *once or more per week*. This is consistent with other research on drinking patterns, including U.S. studies discussed elsewhere in this report.

FIGURE C7: Frequency of Having Five or More Drinks by Age Groupings — Alberta

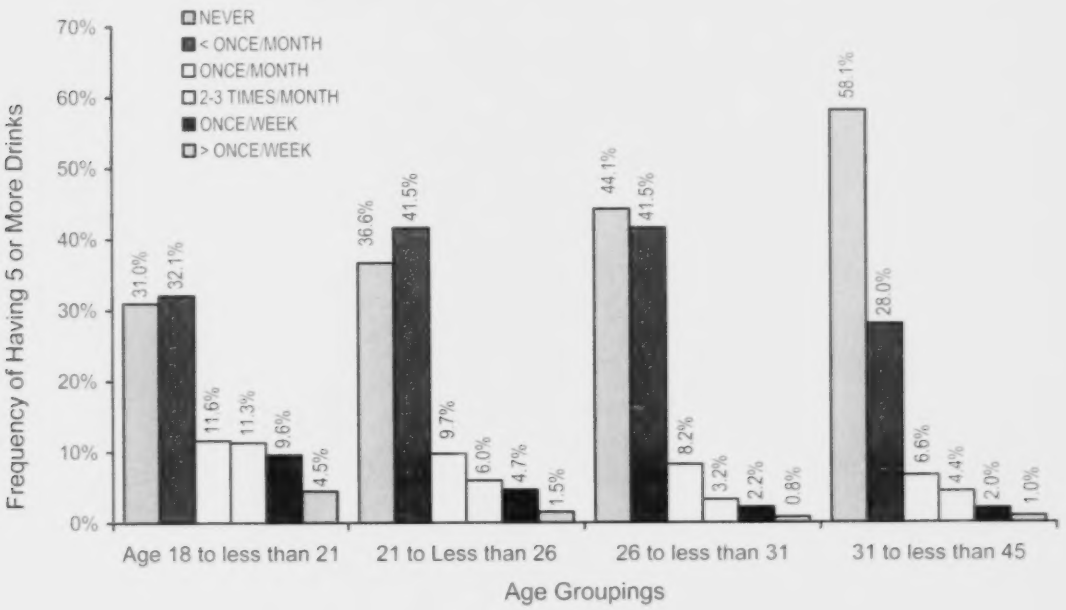
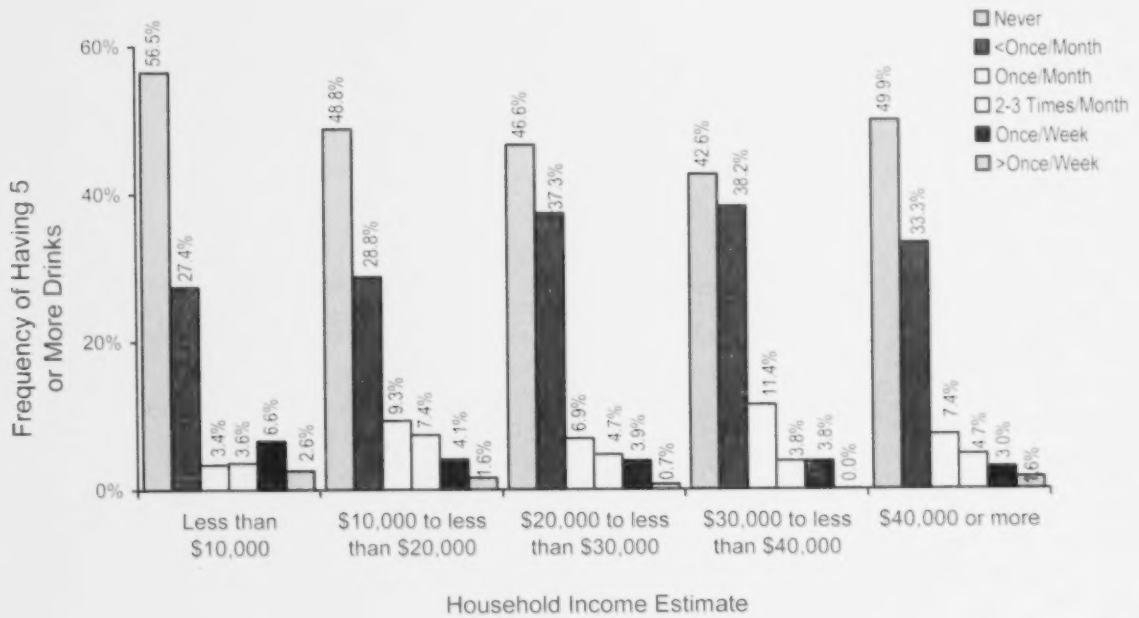


Figure C8 illustrates that binge drinking *once or more per month* was most frequent among women with household incomes of $10,000 to $19,999 (22.4%), followed by women with household incomes of $30,000 to $39,000 (19%). Binge drinking among the other income groups was similar, ranging from 16.2% at under $10,000 to 16.7% at $40,000 or more. However, at 9.2%, women in the poorest households (less than $10,000 per year) were most likely to binge drink *once or more per week*, versus 5.7% in the $10,000-to-$19,999 income group, and 4% to 5% in income groups over $20,000. These findings show that although the poorest women were less likely to drink frequently (as shown earlier in Figure C4), they were more likely to binge when they did drink.

FIGURE C8: Frequency of Having Five or More Drinks by Household Income Estimate — Alberta



Heavy Drinking

In the CCHS, heavy drinking is defined as having ever regularly drunk *more than 12 drinks per week*, though "regularly" was not specifically defined for the respondent. Given the lack of specificity of the question, and given that this type of drinking could have taken place before women were pregnant, this data should be interpreted with caution. Heavy drinking is also associated with risk of adverse pregnancy outcome.

Alberta women who were pregnant at the time of the survey were much more likely to indicate they regularly drank *more than 12 drinks per week* than women who were pregnant in Canada or British Columbia (12.1%, versus 6.9% for all Canada and 5.8% for B.C.). There were no clear age or income differences. Over 10% (10.4%) of Alberta women who were not pregnant reported heavy drinking (Table C4).

Overall, Alberta men were four times more likely than Alberta women to regularly drink *more than 12 drinks per week* (44.2% versus 10.5%), and were more likely to report this level of drinking than men in either Canada (28.5%) or B.C. (25.4%) (Table C4).

TABLE C4: Frequency of Regularly Drinking Greater Than 12 Drinks per Week

	Alberta	Canada	B.C.
Pregnant women	12.1%	6.9%	5.8%
Non-pregnant women	10.4%	8.6%	13.0%
All women	10.5%	8.5%	12.5%
Men	44.2%	28.5%	25.4%

No Alberta women who were pregnant at the time of the survey reported drinking *more than 12 drinks in the week before the survey*, and only 4.5% of Alberta women who were not pregnant reported drinking at that level. It is of note that 1.4% of B.C. women and 0.5% of Canadian women who were pregnant at the time of the survey drank *more than 12 drinks in the week before the survey* (Table C5).

TABLE C5: Frequency of Drinking Greater Than 12 Drinks in the Past Week

	Alberta	Canada	B.C.
Pregnant women	0%	0.5%	1.4%
Non-pregnant women	4.5%	3.6%	3.9%
All women	4.3%	3.5%	3.8%
Men	14.4%	13.7%	12.6%

FIGURE C9: Frequency of Heavy Drinking (more than 12 Drinks) in the Past Week — Alberta Women by Age Groupings

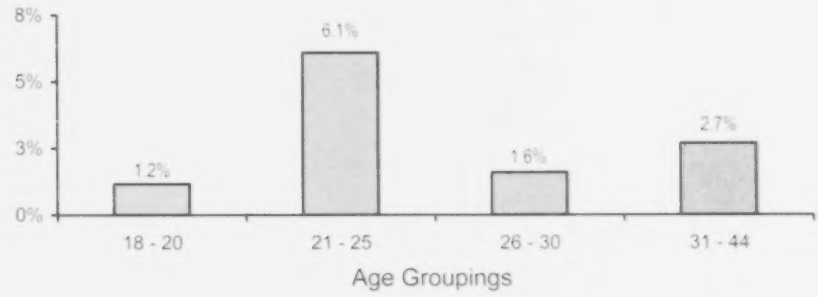
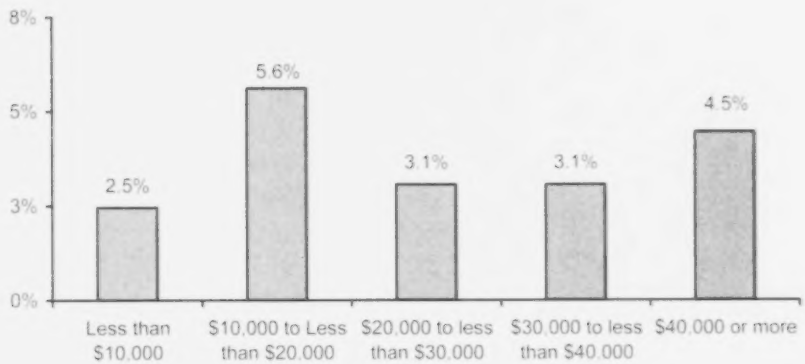


FIGURE C10: Frequency of Heavy Drinking (more than 12 Drinks) in the Past Week — Alberta Women by Estimated Household Income



Drinking Within the Past Week

Only 2.3% of Alberta women who were pregnant at the time of the survey reported drinking alcohol *at all within the last week* (prior to the survey), as compared with 52.3% of Alberta women who were not pregnant (Table C6).

TABLE C6: Frequency of Drinking At All in the Past Week

	Alberta	Canada	B.C.
Pregnant women	2.3%	13.3%	22.0%
Non-pregnant women	52.2%	54.6%	57.0%

Some researchers define heavy drinking for women as *more than **nine** drinks per week*. This lower cut-off is used to account for sex differences in metabolization of alcohol (Sanchez-Craig, 1996). Because CCHS respondents were asked how many drinks they had each day for the week prior to the survey, we were able to categorize drinking during the past week into risk levels using this gender-specific standard. To be consistent with the gender-specific standard, the data in this section is grouped by: no drinking, less than 10 drinks, and 10 or more drinks.

As Table C7 illustrates, 0.8% of Alberta women who were pregnant at the time of the survey reported drinking at the higher risk levels (defined as *more than nine drinks in a week* for women), versus 8.1% of Alberta women who were not pregnant. Furthermore, Alberta women who were pregnant were more likely not to have consumed alcohol in the past week (97.7%) than their counterparts in B.C. (78.0%) or Canada (86.8%).

Alberta men were almost three times more likely than women to report drinking *more than nine drinks in the past week* (21.7% versus 7.9%). These Alberta findings were similar to those for Canada and B.C., as seen below (Tables C8 and C9).

TABLE C7: Reported Number of Drinks in the Past Week — Alberta

	No drinks/week	1 to less than 10 drinks/week	10 drinks and greater
Pregnant women	97.7%	1.5%	0.8%
Non-pregnant women	47.8%	44.1%	8.1%
All women	49.5%	42.6%	7.9%
Men	31.0%	47.3%	21.7%

TABLE C8: Reported Number of Drinks in the Past Week — Canada

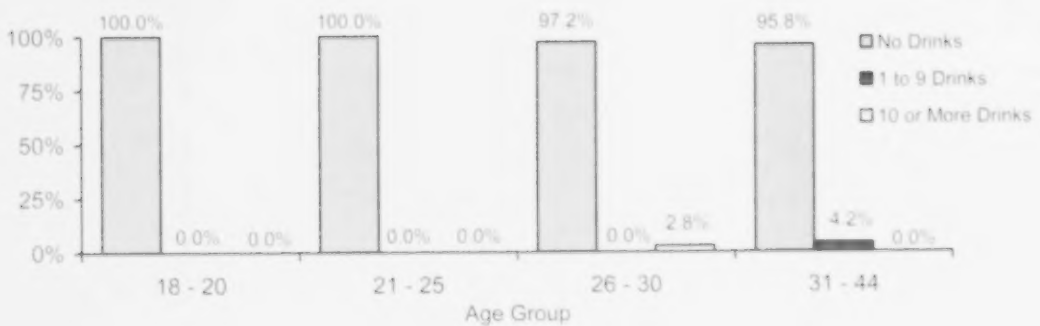
	No drinks/week	1 to less than 10 drinks/week	10 drinks and greater
Pregnant women	86.8%	12.5%	0.8%
Non-pregnant women	45.4%	47.7%	6.9%
All women	46.8%	46.5%	6.7%
Men	33.6%	46.7%	19.8%

TABLE C9: Reported Number of Drinks in the Past Week — British Columbia

	No Drinks /Week	1 to Less than 10 Drinks/Week	10 Drinks and Greater
Pregnant women	78.0%	20.6%	1.4%
Non-pregnant women	43.1%	49.7%	7.3%
All women	44.2%	48.7%	7.1%
Men	33.9%	46.9%	19.1%

Examination by age group for Alberta women who were pregnant at the time of the survey indicates that drinking *in the past week* was not common among any age group. Higher consumption was reported among the 26-to-44 age groups.

FIGURE C11: Number of Drinks Consumed by Pregnant Women in the Past Week — Alberta by Age Groupings



Use of Alcohol During Pregnancy

Women with children answering the CCHS were asked: *Did you drink any alcohol in your last pregnancy?* Although this question contributes to the picture of drinking behaviour during pregnancy, it has limitations: The frequency and level of alcohol use during the pregnancy are not captured in this question; thus, the level of risk related to this use cannot be extrapolated from the data. The "last pregnancy" may have been many years ago, so the answer could be affected by memory and/or changes in social expectations concerning drinking during pregnancy.

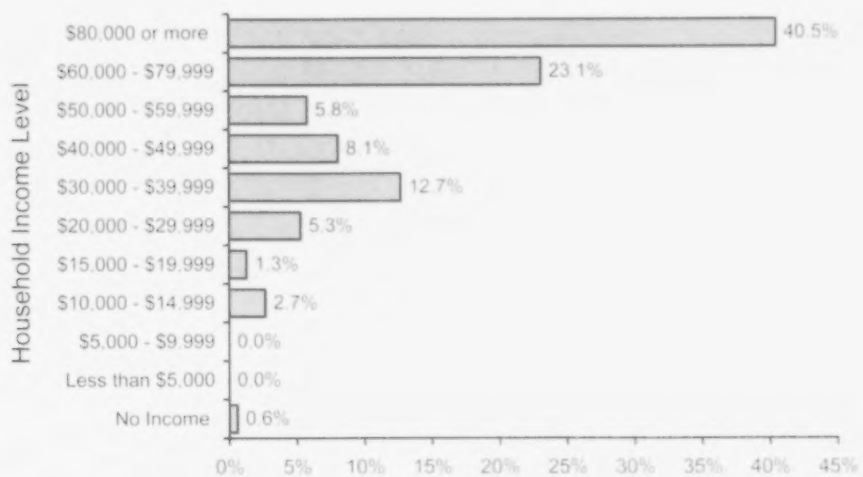
The percentage of Alberta women stating that they drank during their last pregnancy (9.2%) is lower than that of women in B.C. (11.6%) and in Canada (13.7%) (Table C10).

TABLE C10: Reported Alcohol Use During Last Pregnancy

	Alberta	Canada	B.C.
Yes	9.2%	13.7%	11.6%
No	90.8%	86.3%	88.4%

Again, clear income-based differences can be seen in the data; women with higher incomes were much more likely to report using alcohol during their last pregnancy. The percentage of women who drank during their last pregnancy was markedly higher in the two highest income groups (40.5% for $80,000 or more and 23.1% for $60,000 to $79,999), as compared with a range between 0% and 12.7% in the lower income brackets (Figure C12).

FIGURE C12: Reported Use of Alcohol During Last Pregnancy by Income — Alberta



CCHS respondents who ever regularly drank more than 12 drinks per week were asked: *Why did you reduce or quit drinking altogether?*

Pregnancy seems to be a motivator for reducing or quitting drinking. Of Alberta women who ever regularly drank more than 12 drinks per week, 51.7% of those who were pregnant at the time of the survey had reduced or quit drinking because of pregnancy, versus 13.4% of women who were not pregnant.

Impact of Alcohol Use

In the CCHS, respondents who had five drinks or more at least once per month during the last 12 months answered questions related to alcohol dependence. The items used to measure alcohol dependence include a subset of items from the Composite International Diagnostic Interview (CIDI) (Robins et al., 1989).

Table C11 illustrates these indicators of alcohol dependence. Alberta women who were pregnant at the time of the survey were more likely to say that drinking had interfered with their lives than Alberta women who were not pregnant. For example, 28.1% of women who were pregnant at the time of the survey reported having emotional problems due to alcohol use, versus 9.9% of women who were not pregnant. Given that women who were pregnant at the time of the survey actually drank less than women who were not, their greater acknowledgement of the problematic nature of their drinking may reflect a greater sensitivity to risks of drinking while pregnant. It may also reflect changes in understanding and awareness of risk, and lower denial of the impact of use *after* one has quit or reduced alcohol use.

There were fewer differences between Alberta women who were not pregnant at the time of the survey and men in relation to these indicators of alcohol dependence. However, while women were more likely to report that drinking affected their mental health (9.9% for women versus 7.0% for men), men more often reported that drinking affected their risk of physical injury (17.7% for men versus 7.6% for women). These differences are consistent with the general pattern of men drinking more, as well as with documented sex and gender differences in the experience of mental health problems.

TABLE C11: Indicators of Alcohol Dependence by Sex and Pregnancy Status — Alberta*

	Pregnant	Non-pregnant	Men
Been drunk or hung over while at work or school or taking care of children	42.3%	40.3%	42.4%
Been in a situation while drunk or hung over which increased chances of getting hurt	17.1%	7.6%	17.7%
Had emotional or psychological problems because of alcohol use, such as feeling uninterested in things, depressed or suspicious of people	28.1%	9.9%	7.0%
Had such a strong desire or urge to drink that could not resist it, or could not think of anything else	18.3%	6.1%	5.9%
Had a period of a month or more when spent a great deal of time getting drunk or being hung over	28.1%	9.7%	10.8%
Drank much more or for a longer period of time than intended	41.9%	30.0%	37.0%

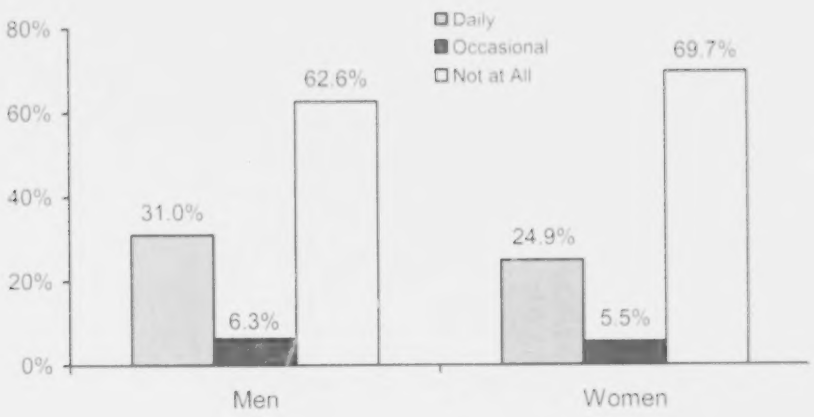
**Only asked of those who consume at least five drinks at least once a month*

Smoking

The overall smoking rate for Alberta women aged 18 to 44 is 30.3%. For Alberta men aged 18 to 44, the rate is 37.4%.

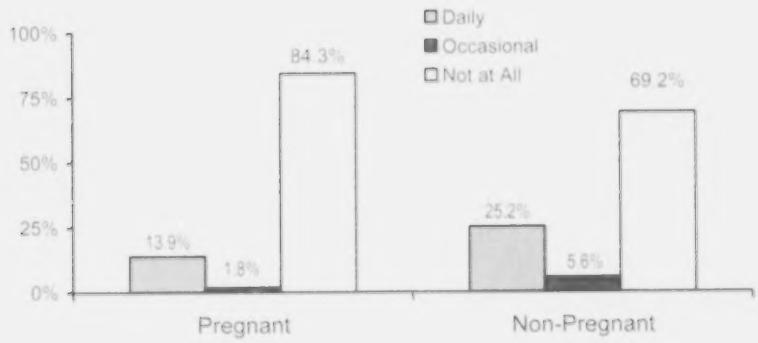
Among Albertans aged 18 to 44, men were more likely than women to smoke *daily* (31.0% versus 24.9%), as seen in Figure C13. *Occasional* smoking was similar for the sexes (at approximately 6%). Women were more likely not to have smoked at all (69.7% for women versus 62.6% for men).

FIGURE C13: Type of Smoker by Sex — Alberta



As shown in Figure C14, Alberta women who were pregnant at the time of the survey were almost half as likely to be *daily* smokers (13.9%) as women who were not pregnant (25.2%). They were also much less likely to be *occasional* smokers (1.8% versus 5.6%). This indicates that pregnant women were not simply switching from daily to occasional smoking.

FIGURE C14: Type of Smoker by Pregnancy Status — Alberta



As illustrated in Figure C15, there was little difference in current *daily* smoking among the different age groups (percentages ranged from 24% to 26%). There were more *occasional* smokers in the younger groups (e.g., 7% to 8% for ages 18 to 25, versus 4% to 5% for ages 26 to 44).

FIGURE C15: Type of Smoker by Age Groupings — Alberta

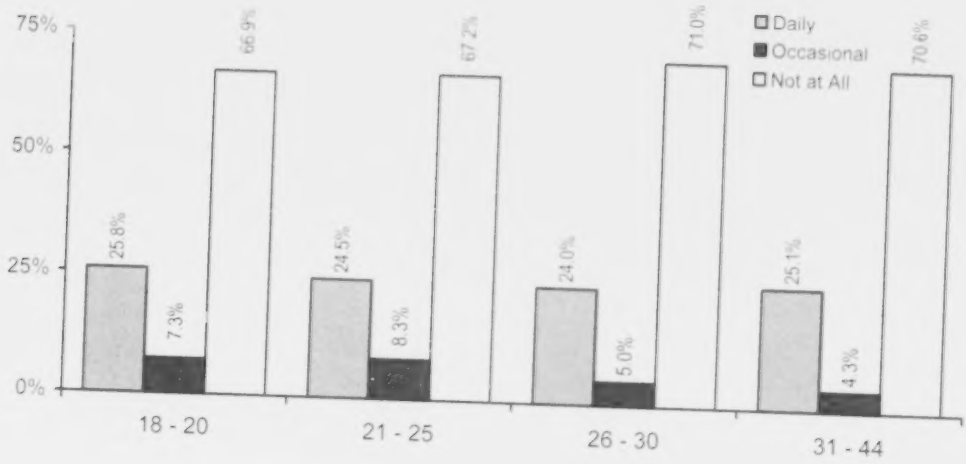
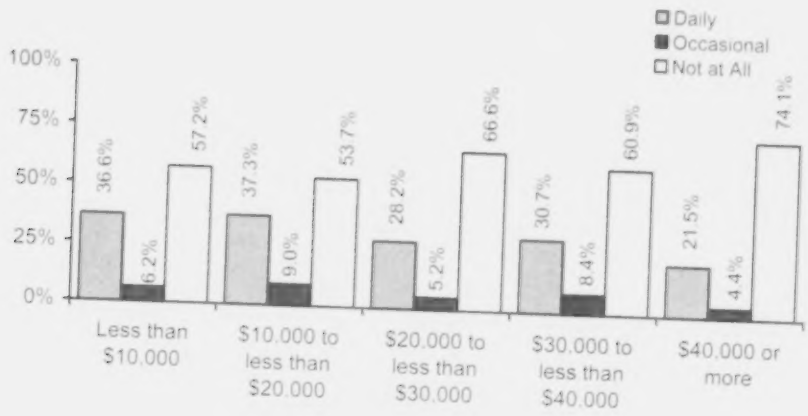


Figure C16 shows smoking patterns by household income.

At approximately 40%, the highest rates of *daily* smoking among Alberta women were in the two lowest income groups: 36.6% with a household income of less than $10,000, and 37.3% with a household income of $10,000 to $19,999. In the next two income groups, close to 30% smoked daily, while the highest income group ($40,000 or more) had the lowest prevalence at 21.5%.

FIGURE C16: Type of Smoker by Household Income — Alberta



The relationship between lower incomes and higher smoking rates is more clear-cut than the relationship between income level and alcohol use. For alcohol use, women in the lowest income range were less likely to drink (with the exception of binge drinking), whereas drinking was more prevalent for both

the moderately low income and higher income groups. These differences might be due to a greater variation in drinking patterns and dependence as compared with smoking. Smoking is most often a daily behaviour and addiction is more likely; it may, therefore, be more difficult for women to quit smoking even if they have little income. On the other hand, few women drink daily, and there appears to be a greater range in patterns of use.

Smoking prevalence among Alberta women who were pregnant at the time of the survey was similar to rates for Canada and B.C. However, rates for all women and men were lower in B.C. than in either Alberta or Canada (which were similar).

TABLE C12: Frequency of Smoking*

	Alberta	Canada	B.C.
Pregnant women	15.7%	15.5%	15.6%
Non-pregnant women	30.8%	30.3%	25.2%
All women	30.3%	29.7%	24.9%
Men	37.4%	35.0%	28.6%

Respondent smokes daily or occasionally

Table C13 suggests that British Columbia has a higher rate of non-smoking among the non-pregnant population (74.8%) than both Alberta (69.2%) and Canada (69.7%), but the same rate among pregnant women at approximately 84.5%.

TABLE C13: Frequency of Non-smoking*

	Alberta	Canada	B.C.
Pregnant women	84.3%	84.5%	84.4%
Non-pregnant women	69.2%	69.7%	74.8%
All women	69.7%	70.3%	75.1%
Men	62.6%	65.0%	71.4%

Respondent does not smoke at all

Self-Perceived Health

Note that these calculations are for women and men aged 18 to 44. If seniors or youth were included, the findings might be quite different.

Self-Rated General Health

More Alberta women who were pregnant at the time of the survey rated their general health as "excellent" than did women who were not pregnant or men, as illustrated in Table C14. However, when the "excellent" and "very good" categories are combined, the rates are similar across all groupings (approximately 68.5%).

TABLE C14: Self-Rated General Health — Alberta

		Pregnant	Non-pregnant	Men
Rating of general health	Excellent	37.6%	24.8%	27.3%
	Very good	31.5%	42.4%	43.0%
	Good	21.1%	25.5%	24.1%
	Fair	9.0%	5.2%	4.8%
	Poor	0.9%	2.2%	0.9%

When comparing ratings across Alberta, B.C., and Canada (Tables C14 to C16), ratings in the "excellent" and "very good" categories combined were similar for men (approximately 70%). For women who were not pregnant at the time of the survey, ratings were similar for Alberta and Canada, but about five per cent fewer B.C. women rated their health as "excellent" or "very good." Although a similar percentage of Alberta and B.C. women who were pregnant at the time of the survey rated their health as either "excellent" or "very good," the rate for Canadian women who were pregnant at the time of the survey was almost 10% higher. More women who were pregnant at the time of the survey in Alberta (37.6%) and in Canada (36.9%) gave an "excellent" rating than did pregnant women in B.C. (29.6%).

TABLE C15: Self-Rated General Health — Canada

		Pregnant	Non-pregnant	Men
Rating of general health	Excellent	36.9%	28.6%	31.8%
	Very good	40.1%	39.9%	39.8%
	Good	18.1%	24.6%	22.6%
	Fair	4.2%	5.3%	4.7%
	Poor	0.8%	1.6%	1.1%

TABLE C16: Self-Rated General Health — British Columbia

		Pregnant	Non-pregnant	Men
Rating of general health	Excellent	29.6%	25.6%	30.3%
	Very good	38.7%	37.7%	38.6%
	Good	21.7%	28.5%	23.8%
	Fair	6.9%	6.8%	5.9%
	Poor	3.0%	1.4%	1.4%

Perceived Stress

Few respondents in Alberta rated their *life stress* as "extreme," and there were no appreciable differences among women who were not pregnant at the time of the survey, women who were pregnant, and men. Table C17 shows that the majority of respondents viewed their life stress as low to moderate. Alberta women who were pregnant at the time of the survey were more than twice as likely as women who were not pregnant to say that they were "not at all" stressed (11.6% versus 4.9%).

Pregnant women identified stress less frequently than either women who were not pregnant or men, with the latter two groups identifying similar rates of stress. For example, there was a sizable minority of both women who were not pregnant at the time of the survey (24.8%) and men (21.3%) who reported "quite a bit" of life stress. However, women who were pregnant at the time of the survey were about half as likely as either women who were not pregnant or men to give this response (11.2%).

TABLE C17: Self-Rated Life Stress — Alberta

		Pregnant	Non-pregnant	Men
Rating of life stress. Most days are . . .	Not at all	11.6%	4.9%	7.4%
	Not very	26.7%	19.1%	19.9%
	A bit	46.0%	46.0%	46.6%
	Quite a bit	11.2%	24.8%	21.3%
	Extremely	4.5%	5.3%	4.8%

Findings regarding self-rated life stress were similar for Alberta and Canada as a whole, though Alberta had about 6% more women who were pregnant at the time of the survey who rated their life stress as "not at all" or "not very" stressful (38.3% for Alberta women versus 31.9% for Canadian women) (Tables C17 and C18).

The differences among the three groups (i.e., women who were not pregnant at the time of the survey, women who were pregnant, and men) were less pronounced in B.C. than in either Alberta or Canada (Table C17, C18, and C19).

Alberta women who were pregnant at the time of the survey were less likely to rate their lives as "quite a bit" or "extremely" stressful than women in Canada as a whole (about a 7% difference). Ratings in Alberta and B.C. were similar (only a 3.5% difference). Reported stress levels for both women who were not pregnant and men were similar across the three jurisdictions (Tables C17, C18 and C19).

TABLE C18: Self-Rated Life Stress — Canada

		Pregnant	Non-pregnant	Men
Rating of life stress. Most days are . . .	Not at all	8.9%	6.4%	9.3%
	Not very	23.0%	18.7%	20.5%
	A bit	45.1%	44.2%	43.4%
	Quite a bit	18.8%	25.1%	22.4%
	Extremely	4.2%	5.5%	4.4%

TABLE C19: Self-Rated Life Stress — British Columbia

		Pregnant	Non-pregnant	Men
Rating of life stress. Most days are . . .	Not at all	4.7%	5.4%	7.6%
	Not very	24.6%	20.9%	22.4%
	A bit	51.5%	46.4%	46.4%
	Quite a bit	12.9%	22.7%	20.0%
	Extremely	6.3%	4.5%	3.6%

A similar pattern emerged for *work-related stress*, as seen in Table C20. Few Albertans reported extreme work-related stress. No Alberta women who were pregnant at the time of the survey reported extreme work-related stress, and they were more likely to report that their workdays were not at all stressful (14.9%) than women who were not pregnant (8.6%) and men (7.2%). However, some of the differences between women who were pregnant at the time of the survey and the other two groups were less pronounced than for life stress. The self-rated health, life stress and work stress findings together are consistent with the finding (discussed later) that pregnant women have more social support of some types than non-pregnant women (particularly emotional support), and that women who were pregnant at the time of the survey also view health care as more accessible (especially women in Alberta).

TABLE C20: Self-Rated Work Stress — Alberta

		Pregnant	Non-pregnant	Men
Rating of work stress. Most days are . . .	Not at all	14.9%	8.6%	7.2%
	Not very	21.2%	19.4%	19.2%
	A bit	45.2%	40.6%	44.0%
	Quite a bit	18.7%	24.7%	23.6%
	Extremely	0%	6.7%	6.1%

Sense of Belonging in the Community

In Alberta, there were no major differences between the three groups (i.e., women who were not pregnant at the time of the survey, women who were pregnant, and men) in terms of *sense of belonging to community*. However, women who were pregnant at the time of the survey were slightly less likely to

rate their sense of belonging in the community as "very strong" or "somewhat strong" than were women who were not pregnant (Table C21). It may be that pregnant women temporarily withdraw from some of the community activities in which they would typically engage.

TABLE C21: Sense of Belonging in the Community — Alberta

		Pregnant	Non-pregnant	Men
Sense of belonging to a community	Very strong	11.0%	12.4%	11.1%
	Somewhat strong	36.4%	40.7%	37.3%
	Somewhat weak	35.6%	30.3%	35.0%
	Very weak	17.0%	16.6%	16.6%

Results were similar for Alberta and Canada. However, B.C. showed a different pattern, as seen in Table C23. B.C. women who were pregnant at the time of the survey were somewhat less likely to say they had a "very strong" or "somewhat strong" sense of belonging (43.6%) than Albertan (47.4%) or Canadian women who were pregnant (48.9%). In B.C., both women who were not pregnant and men were more likely to rate their sense of belonging as "very strong" or "somewhat strong" (59.9% and 58.9%, respectively) than those in Alberta (53.1% of women who were not pregnant and 48.4% of men) or Canada (53.6% of women who were not pregnant and 52.1% of men).

TABLE C22: Sense of Belonging in the Community — Canada

		Pregnant	Non-pregnant	Men
Sense of belonging to a community	Very strong	10.0%	12.5%	12.8%
	Somewhat strong	38.9%	41.1%	39.3%
	Somewhat weak	35.5%	31.1%	32.8%
	Very weak	15.6%	15.3%	15.1%

TABLE C23: Sense of Belonging in the Community — British Columbia

		Pregnant	Non-pregnant	Men
Sense of belonging to a community	Very strong	11.7%	12.7%	13.1%
	Somewhat strong	31.9%	47.2%	45.8%
	Somewhat weak	46.1%	29.9%	32.0%
	Very weak	10.4%	10.2%	9.2%

Health-Care Utilization

Note that these calculations are for women and men aged 18 to 44. If seniors or youth were included, the findings might be quite different.

Alberta women who were pregnant at the time of the survey were markedly *less* likely to *not* receive needed health care than either women who were not pregnant or men (Table C24). This may be because women are most likely to be in regular contact with the health-care system during their pregnancy. It is interesting that women who were pregnant at the time of the survey were more likely to report that they did not receive a regular checkup. Perhaps women see their pregnancy-related visits as being something other than a regular checkup, and would thus be more likely to say they are not receiving the latter. There was also an overall trend toward women who were not pregnant at the time of the survey being more likely to *not* receive care than men, though differences were relatively small (less than 5% in most cases).

TABLE C24: Health-Care Utilization — Alberta

	Pregnant	Non-pregnant	Men
Needed health care and did not receive it	10.7%	18.2%	14.4%
Care not received because unavailable in area	0.9%	5.8%	6.6%
Type of care not received was for physical health problem	51.0%	71.2%	69.1%
Type of care not received was for emotional or mental health problem	5.2%	10.7%	5.5%
Type of care not received was a regular check-up	36.5%	10.3%	4.3%

Findings for B.C. and Canada (Table C25 and C26) were less consistent than for Alberta. For those needing health care but not receiving it, the pattern was similar to Alberta. However, women in B.C. and Canada as a whole who were pregnant at the time of the survey were more likely to say health care was not available in their region, though there were no major differences in perception of access between women who were not pregnant and men. Between women who were pregnant at the time of the survey and those who were not, differences in needing but not receiving either physical or emotional care were less pronounced in B.C. and Canada than in Alberta.

TABLE C25: Health-Care Utilization — Canada

	Pregnant	Non-pregnant	Men
Needed health care and did not receive it	11.9%	17.2%	12.8%
Care not received because unavailable in area	10.2%	8.4%	7.3%
Type of care not rec'd was for physical health problem	71.1%	71.5%	68.2%
Type of care not rec'd was for emotional or mental health problem	7.8%	11.0%	8.0%
Type of care not rec'd was a regular check-up	23.3%	9.4%	6.5%

TABLE C26: Health-Care Utilization — British Columbia

	Pregnant	Non-pregnant	Men
Needed health care and did not receive it	13.6%	17.0%	12.1%
Care not received because unavailable in area	17.3%	7.3%	8.9%
Type of care not rec'd was for physical health problem	72.0%	67.9%	69.6%
Type of care not rec'd was for emotional or mental health problem	10.7%	13.2%	6.5%
Type of care not rec'd was a regular check-up	31.1%	7.2%	6.8%

Behaviour Changes to Improve Health

Note that these calculations are for women and men aged 18 to 44. If seniors or youth were included, the findings might be quite different.

When asked about changes made over the last 12 months to improve their health, Alberta women who were pregnant at the time of the survey were the most likely of the three groups (i.e., women who were pregnant, women who were not pregnant, and men) to have increased their amount of exercise (73.8% versus 67.1% and 65.0%), but were least likely to report that they had quit or reduced smoking (10.2% versus 16.0% and 19.7%) (Table C27). The latter point is interesting given the findings described above regarding the lower levels of either daily or occasional smoking reported by this group (Figure C14). There were no appreciable differences across the three groups in dealing with stress or taking vitamins. Findings across the health behaviours were similar for both women who were not pregnant and men.

TABLE C27: Changes Made to Improve Health — Alberta

	Pregnant	Non-pregnant	Men
More exercise	73.8%	67.1%	65.0%
Quit smoking / reduced amount smoked	10.2%	16.0%	19.7%
Learn to manage stress	6.7%	4.7%	3.1%
Reduce stress level	5.8%	4.2%	3.4%
Take vitamins	3.2%	2.5%	1.5%

Regarding exercise and smoking, rates in B.C. and Canada showed a similar pattern to those in Alberta (Tables C28 and C29). Women in B.C. who were pregnant at the time of the survey were only about half as likely to have quit or reduced smoking (5.4%) as those in Alberta (10.2%) and Canada (10.9%). However, this may be because B.C. has a lower smoking rate overall than the rest of Canada. (In B.C., both women who were pregnant and men were also less likely to mention quitting or reducing smoking than those in Alberta or Canada.)

As in Alberta, there were no other obvious differences between the three groups (i.e., women who were pregnant, women who were not pregnant, and men) in either B.C. or Canada. However, there was an overall pattern of men being more likely to have quit smoking than women (whether pregnant or not).

TABLE C28: Changes Made to Improve Health — Canada

	Pregnant	Non-pregnant	Men
More exercise	68.2%	63.1%	63.1%
Quit smoking / reduced amount smoked	10.9%	14.2%	19.1%
Learn to manage stress	2.3%	4.3%	2.9%
Reduce stress level	4.7%	3.9%	3.2%
Take vitamins	2.7%	3.3%	1.7%

TABLE C29: Changes Made to Improve Health — British Columbia

	Pregnant	Non-pregnant	Men
More exercise	66.5%	62.4%	66.8%
Quit smoking / reduced amount smoked	5.4%	12.9%	14.6%
Learn to manage stress	0.2%	3.8%	2.6%
Reduce stress level	4.9%	3.6%	2.1%
Take vitamins	0%	2.4%	1.6%

Social Support

Note that these calculations are for women and men aged 18 to 44. If seniors or youth were included, the findings might be quite different.

There was an overall pattern for women in Alberta who were pregnant at the time of the survey to report a higher level of social support than either women who were not pregnant or men. Table C30 is focused on social support received most or all of the time for people in the 18-to-44 age range in Alberta. In general, Albertans report high levels of social support.

As shown in Table C30, for 14 of the 19 social support items, women who were pregnant at the time of the survey more often said they have these forms of social support "most of the time" or "all of the time" than the other two groups. However, in some cases the differences were small (less than 5%). Larger differences (5% or more) were observed for "has someone to help if confined to bed," "has someone to give you information in order to help you understand a situation," "has someone to get together with for relaxation," "has someone to

prepare meals if you were unable to do it yourself," "has someone to help with daily chores if you were sick," and "has someone to share most private worries and fears." In other words, there were some dimensions of both instrumental support (e.g., help with daily chores) and emotional support (e.g., share worries and fears) for which women who were pregnant at the time of the survey scored higher than women who were not pregnant. The greater percentages of pregnant women reporting various kinds of social support may in part explain the lower perceived stress and better self-perceived health discussed earlier.

In areas where there was more than a 5% difference between women who were not pregnant and men, women were more likely to say they had various types of emotional support. There was a pattern of men being more likely to report having instrumental support, but differences were small.

In general, women who were not pregnant had higher ratings in emotional support items than in instrumental support items. For example, whereas emotional support items such as "has someone to count on to listen" and "has someone who shows love and affection" are over 90%, "has someone to prepare meals" and "has someone to help if confined to bed" are around 76%. This suggests that approximately one-quarter of women who are not pregnant do not have this type of instrumental support.

TABLE C30: Types of Social Support Received Most or All of the Time — Alberta

	Currently pregnant	Not currently pregnant	Men
Have someone to help if confined to bed	82.9%	76.9%	75.6%
Have someone to count on to listen	94.5%	91.9%	88.8%
Have someone to give advice about a crisis	85.7%	89.4%	85.6%
Have someone to go to the doctor with	89.1%	89.3%	90.3%
Have someone who shows love and affection	97.5%	94.9%	90.2%
Have someone to have a good time with	87.4%	89.7%	90.7%
Have someone to give you information in order to help you understand a situation	90.7%	85.5%	82.1%
Have someone to confide in about problems	89.9%	90.2%	85.4%
Have someone who gives hugs	94.0%	90.2%	81.5%
Have someone to get together with for relaxation	92.9%	84.8%	85.3%
Have someone to prepare meals if you were unable to do it yourself	82.6%	76.4%	81.1%
Have someone whose advice is really appreciated	84.9%	80.6%	75.9%
Have someone to do things with to get your mind off things	84.4%	81.5 %	81.6%
Have someone to help with daily chores if you were sick	85.2%	77.8%	79.0%
Have someone to share most private worries and fears	89.1%	85.0%	76.7%
Have someone to turn to for suggestions on dealing with personal problems	85.6%	85.7%	81.0%
Have someone to do something enjoyable with	86.8%	86.3%	88.0%
Have someone who understands your problems	85.8%	81.8%	77.2%
Have someone to love you and make you feel wanted	94.2%	92.7%	87.5%

Patterns of reported social support in Canada and B.C. were similar to those in Alberta. However, there were fewer differences of 5% or greater—either between women who were pregnant at the time of the survey and women who were not pregnant, or between the latter and men. As in Alberta, women in Canada and in B.C. who were pregnant at the time of the survey were more likely to report receiving various types of social support than either women who were not pregnant or men. As well, women who were not pregnant were more likely than men to report various kinds of emotional support. Men were more likely to report instrumental support (though differences were again small).

Table C31 illustrates the variations of types of social support identified by pregnant women from Alberta, B.C. and all Canada.

TABLE C31: Types of Social Support Received Most or All of the Time by Pregnant Women

	Alberta	Canada	B.C.
Have someone to help if you were confined to bed	82.9%	83.8%	80.4%
Have someone to count on to listen	94.5%	92.9%	90.9%
Have someone to give you advice about a crisis	85.7%	89.5%	90.4%
Have someone to go to the doctor with	89.1%	92.7%	93.9%
Have someone who shows love and affection	97.5%	96.3%	93.2%
Have someone to have a good time with	87.4%	92.6%	86.2%
Have someone to give you information in order to help you understand a situation	90.7%	89.9%	82.8%
Have someone to confide in about problems	89.9%	91.8%	88.7%
Have someone who gives hugs	94.0%	92.6%	86.0%
Have someone to get together with for relaxation	92.9%	91.9%	84.0%
Have someone to prepare meals if you were unable to do it yourself	82.6%	86.6%	85.8%
Have someone whose advice is really appreciated	84.9%	86.5%	77.9%
Have someone to do things with to get your mind off things	84.4%	86.3%	79.6%
Have someone to help with daily chores if you were sick	85.2%	88.6%	83.3%
Have someone to share most private worries and fears	89.1%	90.5%	85.0%
Have someone to turn to for suggestions on dealing with personal problems	85.6%	88.2%	82.5%
Have someone to do something enjoyable with	86.8%	91.2%	86.3%
Have someone who understands your problems	85.8%	89.3%	84.2%
Have someone to love you and make you feel wanted	94.2%	94.7%	90.6%

Depression

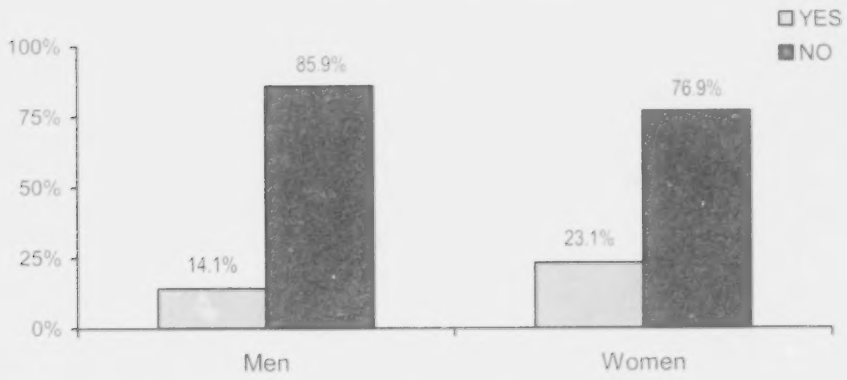
Depression can be both a precursor and antecedent of alcohol use, and can serve as a barrier to getting help for reducing or stopping use.

In the CCHS, the items used to measure depression were a subset of items from the Composite International Diagnostic Interview (CIDI) (Robins et al., 1989) that measure Major Depressive Episode (MDE). The MDE questions ask about periods during which the respondent felt sad or depressed or lost interest in everyday things *within the past 12 months*. These periods include normal periods of sadness (for example, after the death of a loved one), as well as serious depression. Initially, respondents are asked if they experienced a time when they felt sad, blue or depressed for two weeks or more in a row.

The figures below represent responses to the question asked about depression by sex, age, pregnancy status and income level, followed by tables illustrating the more reliable indication of depression levels based on the full set of questions in the CIDI Short Form (Robins et al., 1989).

Alberta women were more likely than men to report being depressed for at least two weeks in the past year (23.1% versus 14.1%), as seen in Figure C17.

FIGURE C17: Felt Depressed for Two Weeks or More in the Past Year by Sex — Alberta



There was no difference in depression levels among age groups, or between Alberta women who were pregnant at the time of the survey and those who were not pregnant, as measured by a single question asking whether they felt depressed for two or more weeks in the past year. Over 20% of all women across all the age groups reported feeling depressed sometime in the past year.

FIGURE C18: Felt Depressed for Two Weeks or More in the Past Year by Age — Alberta

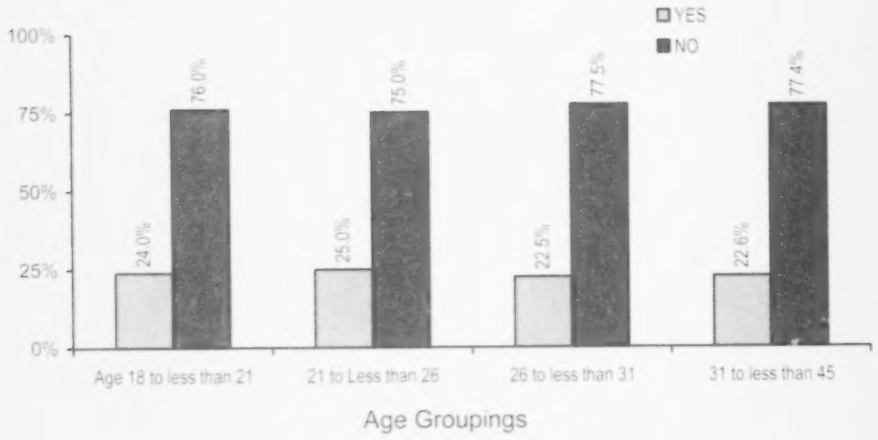
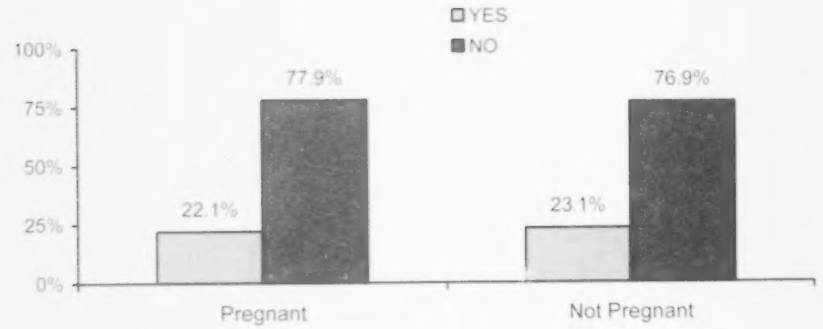


FIGURE C19: Felt Depressed for Two Weeks or More in the Past Year by Pregnancy Status — Alberta



Women in the two lowest income groups were more likely to report depression (38% to 40%) than women in the three highest income groups (20% to 26%), as illustrated in Figure C20. This may be due to fewer opportunities and less control over one's life among people living on low incomes.

FIGURE C20: Felt Depressed for Two Weeks or More in Past Year by Household Income Estimate — Alberta

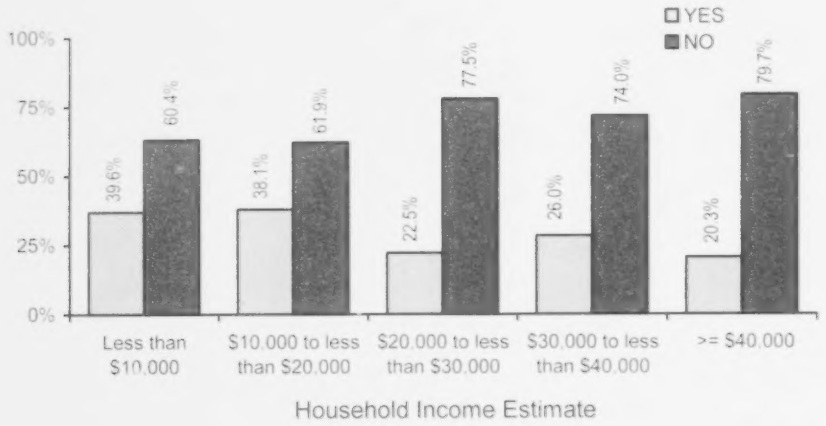


Table C32 shows that Alberta and B.C. were virtually the same in terms of reported two-week depression (using the single question as described above) for women who were pregnant at the time of the survey, women who were not pregnant, and men (differences between the provinces were less than 1%). Canada as a whole had slightly lower percentages of each group reporting depression than either Alberta or B.C., but differences were small (less than 5%).

TABLE C32: Felt Depressed for Two Weeks or More in the Past Year

	Alberta	Canada	B.C.
Pregnant women	22.1%	17.5%	21.9%
Non-pregnant women	23.1%	20.8%	22.8%
Men	14.1%	12.0%	13.3%

In Tables C33 through C35, the scores for the depression scale have been grouped as follows: No Depression = 0, Low Depression = 1–3, Moderate Depression = 4–5, and High Depression = 6–8.

For convenience, low-risk drinkers were defined as those drinking 12 drinks or less per week (the male standard commonly used in analysis of the CCHS data), rather than the gender-specific standards identified earlier as one to 12 drinks or less for men and one to nine drinks or less for women.

Women in Alberta who were pregnant at the time of the survey were more likely to report moderate or high depression (17.2%) than women in Canada (11.2%) or B.C. (12.5%). Lower-risk drinkers in both Alberta and B.C. were more likely to report moderate or high depression (17.1% and 17.4%, respectively) than in Canada overall (13.9%).

TABLE C33: Depression Scores by Pregnancy Status, Sex, and Drinking Risk — Alberta

	No depression	Low depression	Moderate depression	High depression
Pregnant women	82.1%	0.8%	2.6%	14.6%
Non-pregnant women	81.4%	1.7%	6.0%	10.8%
Men	88.0%	1.7%	4.3%	6.1%
Low-risk drinkers	81.2%	1.7%	5.9%	11.2%
High-risk drinkers	80.6%	0.3%	3.9%	15.2%

TABLE C34: Depression Scores by Pregnancy Status, Sex, and Drinking Risk — Canada

	No depression	Low depression	Moderate depression	High depression
Pregnant	87.3%	1.5%	4.1%	7.1%
Non-pregnant	84.9%	1.4%	5.1%	8.5%
Men	90.7%	1.4%	3.4%	4.5%
Low-risk drinkers	84.7%	1.4%	5.3%	8.6%
High-risk drinkers	78.9%	2.4%	6.8%	12.0%

TABLE C35: Depression Scores by Pregnancy Status, Sex, and Drinking Risk — British Columbia

	No depression	Low depression	Moderate depression	High depression
Pregnant	84.4%	3.1%	5.8%	6.7%
Non-pregnant	81.9%	1.8%	6.1%	10.2%
Men	88.4%	1.9%	4.2%	5.5%
Low-risk drinkers	80.7%	1.9%	6.9%	10.5%
High-risk drinkers	76.2%	4.6%	7.3%	11.9%

Depression and drinking are two coexisting disorders captured in the CCHS survey. Levels of coexisting post-traumatic stress disorder and levels of illicit drug use are examples of other variables that would provide a fuller picture of pregnancy and risk.

Questions on levels of use of psychotropic and other prescription drugs were included in the survey, although only for Canada as a whole, and with no indication of whether any of the use might be construed as misuse. In accordance with historical findings, women of childbearing years were much more likely than men to use psychotropic medication, in some categories more than twice as likely. For example, 6.4% of women who were not pregnant reported using antidepressants, versus 2.7% of men. Women who were pregnant at the time of the survey were much less likely than women who were not pregnant to use psychotropic medication, in all categories except tranquillizers (2.7% versus 2.3%), perhaps indicative of the addictive properties of this category of drugs. Of the licit drug categories included here, pain relievers were the only category used extensively by women who were pregnant at the time of the survey (39.0%), but were still used at a much lower rate than by women who were not pregnant (76.1%) or men (62.8%) (Table C36).

TABLE C36: Selected Licit Drug Use by Pregnancy Status and Sex — Canada

	Pregnant women	Non-pregnant	Men
Pain relievers	39.0%	76.1%	62.8%
Codeine/Demerol/ Morphine	3.7%	7.7%	5.7%
Antidepressants	2.8%	6.4%	2.7%
Tranquillizers	2.7%	2.3%	1.3%
Sleeping pills	1.2%	3.6%	3.0%
Diet pills	0.1%	1.5%	0.6%

D. Vital Statistics, Notice of a Live or Stillbirth and Newborn Record

The most current information on substance use during pregnancy is only available through custom tabulation in the report *Vital Statistics, Notice of a live or stillbirth and newborn record*. (Alberta Health and Wellness, 2003).

The data do not include distinctions between different drinking patterns in terms of amount and frequency. As previously noted, underreporting may be an issue given the stigma of drinking during pregnancy.

Among Alberta women, the reported use of alcohol and tobacco during pregnancy has declined. Conversely, there has been a recent rise in reported use of illicit drugs during pregnancy.

TABLE D1: Substance Use During Pregnancy — Alberta

	Alcohol	Tobacco	Other Drugs
1997	5.2%	26.7%	1.5%
1998	4.4%	26.8%	1.6%
1999	4.3%	25.8%	1.5%
2000	4.0%	24.5%	1.9%
2001	3.9%	23.3%	1.9%
2002*	4.0%	22.1%	2.2%

** 2002 data are preliminary*

E. Alberta Reproductive Health: Pregnancies and Births

Alberta Reproductive Health: Pregnancies and Births (Alberta Health and Wellness, and Alberta Medical Association, 2002) is a compilation of various Alberta statistics. It examines the association between substance use during pregnancy and several birth outcomes, presenting three-year averages (1998–2000), as well as year-by-year rates.

Birth statistics in the report[1] are based on *Vital Statistics Birth Registration Files*. Data on alcohol, street drug and tobacco use are taken from *Notice of Live Birth or a Stillbirth* and then entered into the *Vital Statistics Birth Registration Files*.

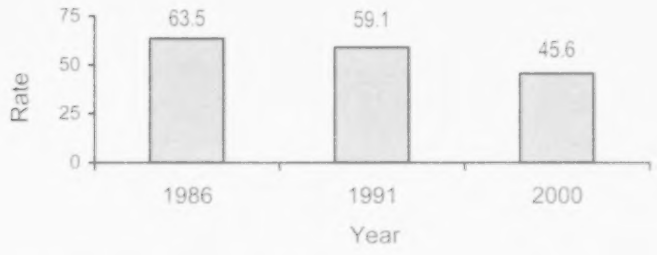
Data on substance use from *Notice of a Live Birth or a Stillbirth* are based on the self-report of women in labour. Because of the social stigma of using substances during pregnancy, this method of reporting may underestimate the actual incidence of substance use among pregnant women. Also, because detailed statistical breakdowns for the substance use variables (e.g., drinking or street drug use among pregnant women) have small sub-sample sizes, estimates are prone to variability.

Key Reproductive Outcomes

Before focusing on the substance use statistics, it is informative to examine selected highlights of key reproductive outcomes. Figures E1 through E6 show a number of comparisons over the 15-year period from 1986 through 2000.[2]

The total number of live births in Alberta in 2000 was 36,613. As Figure E1 indicates, the birth rate in Alberta declined from 63.5 live births per 1000 women to 45.6 between 1986 and 2000.

FIGURE E1: Fertility (live births per 1000 women)

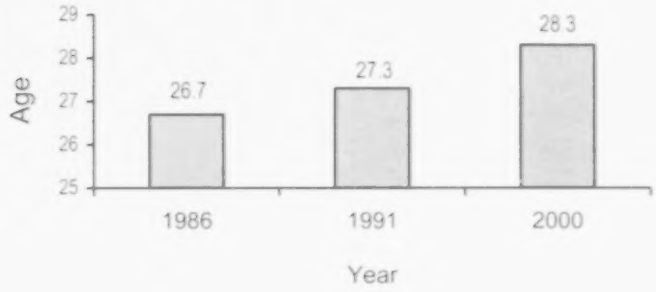


[1] Use of the terms "the study," "the authors," or "the report" in this section refers to the source document: Alberta Reproductive Health: Pregnancies and Births, 2002.

[2] These statistics are taken from Table A.1 in Alberta Reproductive Health: Pregnancies and Births, 2002.

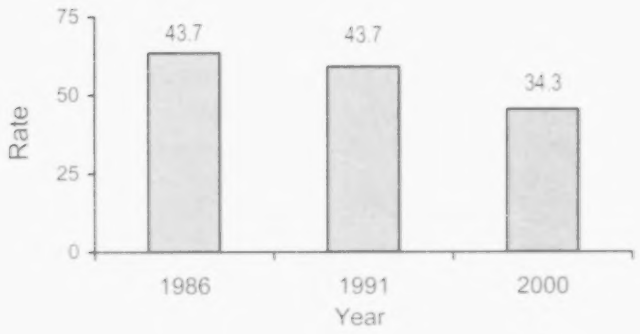
The average age of women giving birth increased by 1.6 years between 1986 and 2000 (Figure E2).

FIGURE E2: Maternal Age (at delivery)



The overall rate of congenital anomalies (e.g., spina bifida, cleft palate) declined between 1986 and 2000, after peaking in 1990 at 48.5 per 1000 women (Figure E3). Congenital anomalies are more common in babies born to mothers over 35.

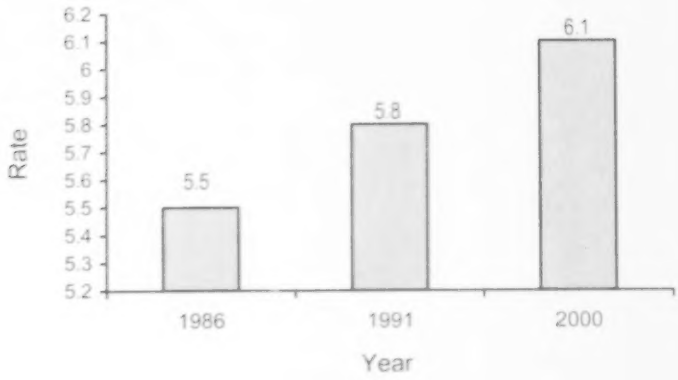
FIGURE E3: Congenital Anomalies (per 1000 women)



As seen in Figure E4, the overall trend between 1986 and 2000 was an increasing rate of babies born with low birth weight (less than 2500 g). Although not apparent in Figure E4, the rate of low birth weight stabilized over the years leading up to 2000 (see Table A.1 and Figure 11 in *Alberta Reproductive Health: Pregnancies and Births, 2002*). In the study, the increase in low birth-weight babies is attributed to more preterm and/or multiple births.

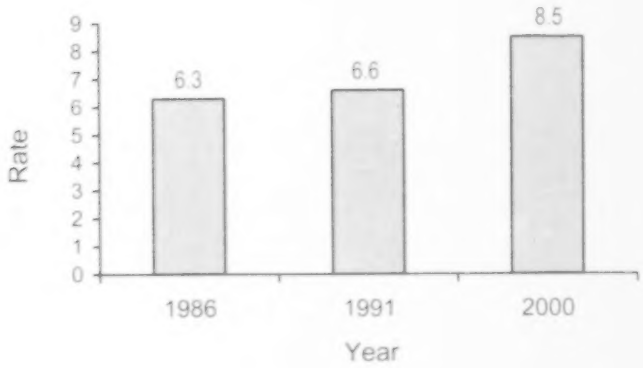
A number of risk factors for low birth weight are identified in the study, including smoking or use of alcohol or other drugs during pregnancy, low or high maternal age, low socio-economic status, multiple pregnancy, poor prenatal care, low level of maternal education, preterm birth, and female baby.

FIGURE E4: Low Birth Weight (live births less than 2500 g, per 100 live births)



The preterm birth rate also rose between 1986 and 2000 in a more or less linear trend with some minor fluctuations (Figure E5). The authors of the study suggest a number of factors that may be associated with preterm births, including more multiple births, more obstetrical intervention and use of ultrasound technology to estimate gestational age, as well as a number of risk factors such as smoking, genital tract infection, pre-eclampsia, incompetent cervix, prior preterm birth, placental abruption, stress and depression.

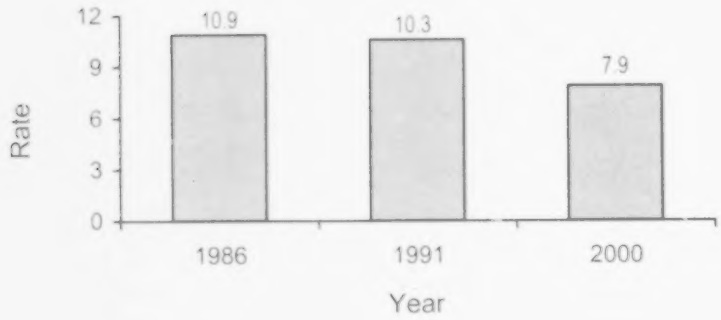
FIGURE E5: Preterm Births (live births with gestation period of 37 weeks or less, per 100 live births)



In the opinion of the authors, both low-birth-weight and preterm births are of critical concern in the health system, because they are associated with increased perinatal and neonatal mortality and childhood morbidity.

Small for gestational age (SGA) rates declined between 1986 and 2000 (Figure E6). No reason is given for this decrease. The authors do not present separate data for SGA births that occur preterm versus full-term, though they do note that SGA preterm births are more associated with a number of risk factors including maternal smoking.

FIGURE E6: Small for Gestational Age Rate (birth weight below the 10th percentile of appropriate for gestational age infants, per 100 live singleton births)



Substance Use Patterns Among Pregnant Women

Prevalence of Alcohol, Street Drug and Tobacco Use

More current information is available through custom tabulation—see Section D above.

Between 1998 and 2000, an average of 4.2% of women who had a live birth consumed alcohol during pregnancy. Use of street drugs during pregnancy was rare. Among Alberta women who had a live birth between 1998 and 2000, 1.7% used street drugs during pregnancy. The most commonly used substance during pregnancy was tobacco; 25.7% of Alberta women who had a live birth between 1998 and 2000 reported smoking at some point during their pregnancy. Smoking prevalence declined across the three years.

Substance Use and Maternal Age

Pregnant women who used alcohol, street drugs or tobacco during pregnancy were younger than those who did not. Figure E7 illustrates these age differences.

FIGURE E7: Average Maternal Age and Substance Use During Pregnancy in Alberta 1998–2000 Combined

Substance Use and Birth Outcomes

According to the authors of the study, smoking is the most important modifiable behaviour associated with low birth weight, and for singleton births the mortality rate of infants exposed to maternal smoking is nearly double that of infants born to non-smokers. Smoking during pregnancy is also associated with preterm births, babies who are small for gestational age, and stillbirths. The report also points out that women who smoke postpartum are likely to breastfeed their babies for a shorter period of time than non-smoking women do. Figures E8 to E10 present birth weight and preterm birth data by substance use (Table A.31 in *Alberta Reproductive Health: Pregnancies and Births, 2002*).

Alcohol: Mean birth weight was slightly lower for babies born to mothers who drank alcohol during pregnancy than for babies whose mothers did not drink (Figure E8). Both the low-birth-weight rate and preterm birth rate were higher for babies whose mothers drank during pregnancy than for babies whose mothers did not (Figures E9 and E10).

Street Drugs: Mean birth weight was lower for babies born to street-drug users versus non-users (Figure E8). The rates of low-birth-weight and preterm births were higher (approximately double) for babies born to street-drug users than for those born to non-users (Figures E9 and E10). Marijuana and cocaine were the most commonly used drugs.[3]

[3] The earlier *Alberta Reproductive Health: Pregnancy Outcomes 2001* reported that babies of women who drank or used street drugs during pregnancy are also more likely to be small for gestational age: 13.3% of babies born to women who drank during pregnancy were small for gestational age, as compared with 9.3% of babies born to women who did not; and 18.4% of babies born to women who used street drugs during pregnancy were small for gestational age, as compared with 9.3% of babies born to non-users (the 2001 data were based on years 1997–1999). (See Alberta Health and Wellness, & Alberta Medical Association, 2001.)

Tobacco: Babies born to smokers weighed less than those born to non-smokers (Figure E8). Both the low-birth-weight rate and the preterm birth rate were higher for smokers than for non-smokers (Figure E9 and E10).

FIGURE E8: Average Birth Weight and Substance Use During Pregnancy in Alberta 1998–2000 Combined

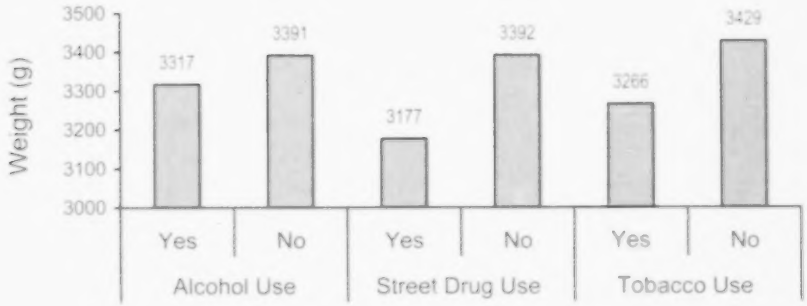
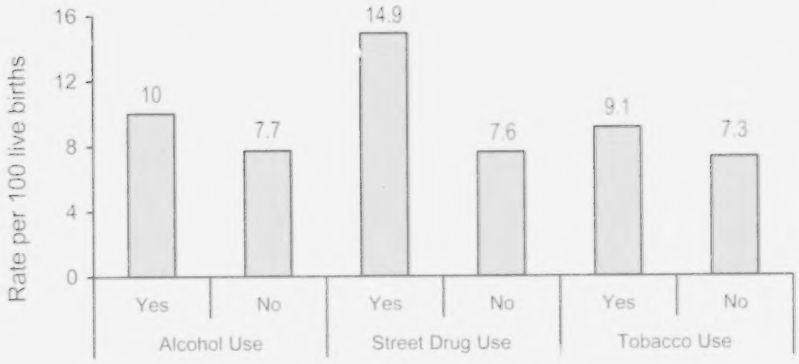


FIGURE E9: Low Birth Weight and Substance Use During Pregnancy in Alberta 1998–2000 Combined

FIGURE E10: Preterm Births and Substance Use During Pregnancy in Alberta 1998–2000 Combined



Substance abuse was scored as a risk factor in 6% of the stillbirths and neonatal deaths that occurred in Alberta in 1998. This figure may be an underestimate, as it depends upon the mother's self-report (which may be influenced by social stigma), and also upon health-care personnel completing the risk score.

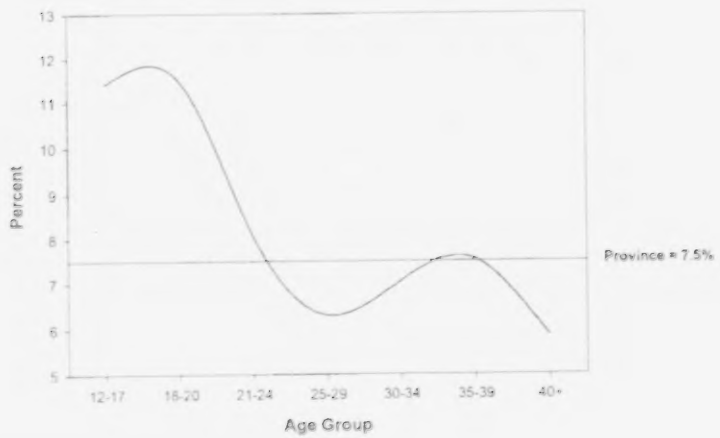
F. Maternal Risk Factors in Relationship to Birth Outcome

A report from Alberta Health and Wellness (1999) includes information about a number of maternal behaviours that influence risk of preterm birth (less than 37 weeks gestation) and low birth weight (less than 2500 grams) among babies born between 1994 and 1996. This study[4] uses *Notice of a Live Birth or a Stillbirth* as its data source, and many of the statistics presented have since been updated in the more recent *Alberta Reproductive Health: Pregnancies and Births, 2002* (see above). This section will therefore focus only on issues not covered in the *Alberta Reproductive Health Study 2002*. For example, *Maternal Risk Factors in Relationship to Birth Outcome 1999* examines substance use behaviour of currently pregnant women across several age groups.

Alcohol Use

Overall, alcohol use during pregnancy was reported by 7.5% of mothers (representing almost 8,000 women). However, 11.5% of mothers aged 12 to 20 reported alcohol consumption during pregnancy, versus half as many (5.9%) aged 40 and older. The study suggests that the reduction of alcohol use in older women may reflect improved awareness of the risks of drinking during pregnancy. However, alcohol use declined from about age 20 to 24, rose somewhat until about age 35, then dropped off again (see Figure 4.17 in *Maternal Risk Factors in Relationship to Birth Outcomes 1999*, reproduced here).

FIGURE F1: Percentage of Mothers Indicating Some Alcohol Use During Pregnancy, by Age at Time of Delivery, 1994–1996



[4] Use of the terms "the study," "the authors," or "the report" in this section refers to the source document *Maternal Risk Factors in Relationship to Birth Outcome*.

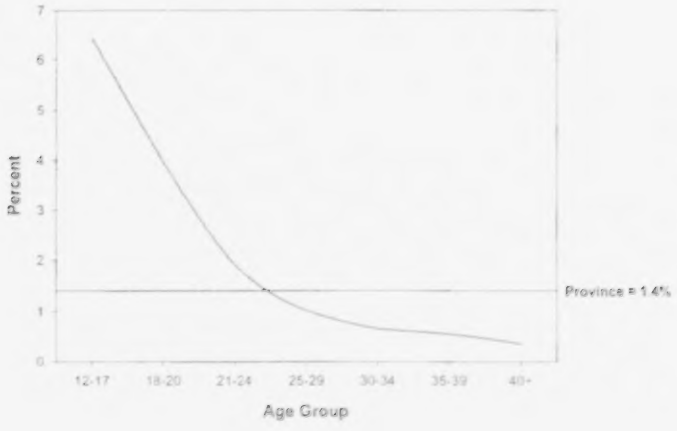
The study also found that use of alcohol by itself was not associated with low birth weight or preterm delivery, though the authors caution that this finding should not be taken to assume alcohol use during pregnancy is without risk. It should be noted that more recent data from *Alberta Reproductive Health: Pregnancies and Births, 2002* (see above) indicates that alcohol use during pregnancy *is* associated with both low birth weight and preterm delivery.

However, women who both smoked *and* drank alcohol during pregnancy were more likely to deliver babies of lower average birth weights, and had higher rates of low birth weight and/or preterm delivery, than mothers who only smoked. The authors suggest that the combination of smoking and alcohol use could exacerbate the risk of preterm delivery through a physiological mechanism, and/or that women who both smoke and drink during pregnancy have distinct psychological, social or economic needs that ought to be addressed.

Street Drug Use

As with alcohol, street drug use during pregnancy was age related. Overall street drug use during pregnancy was 1.4% (representing almost 1500 women). However, younger women were most likely to use street drugs during pregnancy. Prevalence dropped steeply from 6.4% among mothers aged 12 to 17, to 4% of those aged 18 to 20, to 2% of those aged 21 to 24. There was then a more gradual levelling off, to a low of 0.5% for mothers aged 35 and older. (See Figure 4.19 in *Maternal Risk Factors in Relationship to Birth Outcome 1999*, reproduced here). Consistent with *Alberta Reproductive Health: Pregnancies and Births, 2002* (see above), this study found that the use of street drugs was associated with both low birth weight and preterm delivery.

FIGURE F2: Percentage of Mothers Reporting Illicit Street Drug Use During Pregnancy, by Age at Time of Delivery, 1994–1996

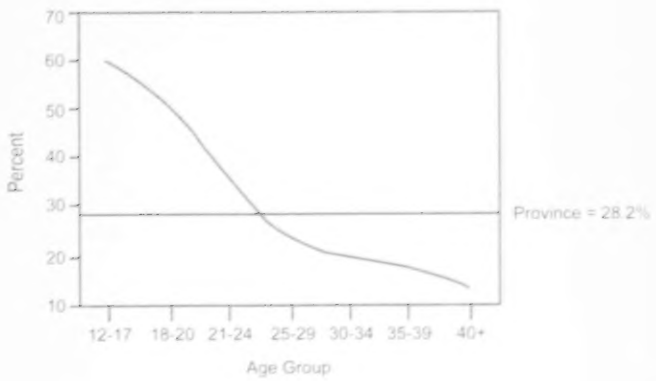


Tobacco Use

Tobacco was the most commonly used drug among pregnant women, and had a significant negative impact on birth weight. As discussed earlier, if women both smoked and drank alcohol during pregnancy, they were more likely to deliver low-birth-weight or premature babies than if they only smoked.

As with alcohol and street drugs, smoking prevalence was higher among younger mothers. Overall, 28.2% of mothers (representing almost 32,000 women) reported smoking at some point during their pregnancy. However, about 60% of women under age 18 reported smoking during pregnancy, as compared with less than 20% of those 35 and older. The authors point out that even though women over age 30 were less likely to smoke during pregnancy, those that do are at higher risk of delivering a low-birth-weight baby.

FIGURE F3: Percentage of Women Smoking During Pregnancy by Age, 1994–1996



G. Canadian and Provincial Perinatal Health Reports

The Canadian Perinatal Health Report

The *Canadian Perinatal Health Report 2000* (Health Canada, 2002) is the first national surveillance report from the Canadian Perinatal Surveillance System. The study[5] presents indicators of health behaviours and services, along with health status outcomes for women and infants. These indicators include substance use. The report did not collect original data; it pulled data for the various indicators from existing data sets. The substance use data will be presented below. It was taken from the microdata file of the *National Longitudinal Survey of Children and Youth (NLSCY)* for 1996–97. Note that the statistics for this study refer to the percentage of children aged zero to three exposed to substance use, rather than the percentage of all mothers who engaged in substance use behaviour during pregnancy.[6]

Alcohol Use

The report defines prevalence of prenatal alcohol use as the number of pregnant women who drank alcoholic beverages during pregnancy, as a proportion of all pregnant women in Canada. These data are limited in that they do not distinguish among differing amounts and frequencies of drinking. The report also notes that there may be underreporting of drinking during pregnancy because of its social undesirability and known risks to the fetus.

According to *NLSCY* (1996–1997), 16.6% of children under the age of three in Canada (excluding the Territories) had mothers who reported drinking alcohol during pregnancy. In comparison, Prairie provinces (as a group) and British Columbia had alcohol use prevalence slightly below the national average (at 16.1% and 14.9%, respectively).

Older mothers were more likely to report prenatal alcohol consumption than younger mothers: 11.7% of children having mothers under age 25 were exposed to some alcohol before birth, as compared with 22.6% of children with mothers 35 and older.

Tobacco Use

Smoking prevalence was defined as the number of women who smoked during pregnancy, as a proportion of all pregnant women in Canada. According to

[5] Use of the terms "the study," "the authors," or "the report" in this section refers to the source document *Canadian Perinatal Health Report 2000*.

[6] The NLSCY dataset contained 7,040 children zero to three-years-old, representing approximately 284,000 children when weighted.

NLSCY (1996–1997), 21.3% of Canadian children under three had mothers who reported smoking during pregnancy. The Prairie provinces (combined) had a smoking prevalence close to the Canadian statistic, whereas B.C. was below, at 18.6%.

Among the mothers who smoked, 7% smoked more than 10 cigarettes per day, and 90.9% smoked in the third trimester, when negative effect on fetal growth is greatest. Younger mothers were more likely to smoke. More specifically, 40.5% of children under three whose mothers were under 20 were exposed to tobacco in the womb, as compared with 17.2% of children whose mothers were 35 or older.

Birth Outcomes

We have not presented birth outcome data from this report for several reasons. First, the study could not examine the relationship between birth outcomes and maternal substance use because the required data sources were not linked (i.e., survey data and vital statistics). Second, there are more recent statistics on birth outcomes in Alberta and British Columbia than the 1997 figures used here by Health Canada. Third, this study has limited use for national statistics because some of the data excluded whole provinces or territories. For example, the Canadian average for preterm birth rates excluded Ontario.

Alberta Perinatal Data 2001

Information for Alberta Perinatal Data is collected in two separate databases, both using information from the *Antenatal Risk Assessment* on the *Alberta Provincial Delivery Record*. Information on substance use during pregnancy is included.

There were almost 38,000 births in Alberta in 2001. According to the two sources below, both the general rate for women smoking while pregnant and the rate for younger women smoking while pregnant were higher in northern and central Alberta than in southern Alberta. There were similar rates across the province for risky alcohol use and illicit drug use.

Note: Practices related to the asking and reporting of this information are not consistent, a limitation that must be taken into consideration when interpreting the data.

Northern and Central Alberta

The Northern and Central Alberta Perinatal Outreach Program provides data on substance use information on births in northern and central Alberta for the 2001 calendar year in the report *Alberta Perinatal Data 2001* (2003).

Over twenty-one thousand (21,492) live births took place in the northern and central areas of Alberta in 2001. Over 9,000 mothers (44% of all births in this geographic area) were living in Edmonton at the time of delivery, and 4% were living in Grande Prairie.

Twenty-six per cent (26.3%) of women were identified as smokers (defined as smoking anytime during pregnancy; this definition does not identify how much the woman smoked, or whether she quit or reduced smoking during the pregnancy). Almost half (49.6%) of these smokers were in the 18-to-25 age range. Women having stillbirths in this period were only slightly more likely to be identified as smokers than women having live births (31% versus 26%).

Four hundred eighteen mothers (2%) were identified for risky alcohol use (defined as *three or more drinks on any one occasion* during pregnancy, or *one or more drinks per day* throughout pregnancy). Almost five per cent (4.8%) of women having stillbirths were identified as using alcohol.

Two hundred seventeen women having live births (1%), and less than 3% of women having stillbirths, were identified as drug dependent (quantity or type of drugs used are not defined).

Southern Alberta

The Southern Alberta Perinatal Outreach Program provides information on births for the southern area of the province in 2001 in the report *Alberta Perinatal Data 2001* (2003).

Over 16,000 (16,412) live births took place in southern Alberta in 2001. Over 12,000 mothers (75% of all births in this geographic area) were living in Calgary at the time of delivery.

Eighteen per cent of southern Alberta women having live births were identified as smokers (defined as smoking anytime during pregnancy; this definition does not identify how much the woman smoked, or whether she quit or reduced smoking during the pregnancy). Approximately one-third (32%) of these smokers were in the 18-to-25 age range. Women having stillbirths were more likely to be identified as smokers (26% versus 18%).

Only two hundred seventeen mothers (1.3%) were identified for risky alcohol use (defined as *three or more drinks on any one occasion* during pregnancy or *one or more drinks per day* throughout pregnancy). Because of the small number of women who used alcohol having stillbirths, the data were not available.

Less than 1% of women having live births were identified as drug dependent (quantity and type of drugs used are not defined); again, data were not available for women having stillbirths.

B.C. Perinatal Data 2000–2001

The B.C. Perinatal Database (British Columbia Reproductive Care Program, n.d.) captures information on all births in the province. Data specific to substance use and health risks for the one-year period from April 1, 2000 to March 31, 2001 are included here. During this period, 40,598 births occurred to 40,043 mothers, of whom

- 6.6% were identified as lone parents (38% of those aged 19 and under)
- 1.9% were flagged for drug use (8% of those aged 19 and under)
- 1.3% were flagged for alcohol use (4.5% of those aged 19 and under)
- 13.2% were flagged as current smokers (38.5% of those aged 19 and under)
- 5.8% had less than five prenatal visits (11.9% of those aged 19 and under)
- 99% were not assessed using the alcohol screening tool (T-ACE)

Perinatal database information is useful in that it captures all births; however, there are significant challenges in collecting information on risk behaviours in this context.

H. Survey Data from the United States

This section will summarize some key findings from two recent U.S. projects—the first on alcohol use and the second on both alcohol and illicit drug use. These studies refer to substance use both among pregnant women and among women of childbearing age. U.S. surveys and health utilization databases, with their larger sample sizes, more adequately present detailed breakdowns of drinking behaviour among pregnant women by different consumption patterns (amounts or frequencies of use). In some cases, they provide additional confirmation of the Canadian findings summarized to this point.

Alcohol Use Among Women of Childbearing Age—United States, 1991–1999

In the study *Alcohol Use Among Women of Childbearing Age—United States, 1991–1999*, the Centers for Disease Control (CDC) (2002) analyzed representative survey data from the Behavioral Risk Factor Surveillance System (BRFSS) from 1991 through 1999. This is a random telephone survey of the non-institutionalized U.S. population aged 18 years and up. The CDC defined women of childbearing age as those aged 18 to 44. Of the 107,141 women aged 18 to 44 who were surveyed, only 4,695 (4.4%) were pregnant.

The CDC study found that the rate of any alcohol use (defined as at least one drink in the 30 days before the survey) during pregnancy increased between 1991 and 1995, then declined again between 1995 and 1999.[7] However, rates of binge drinking (defined as five or more drinks on any one occasion) did not change from 1995 to 1999. Rates of frequent drinking (defined as seven or more drinks per week, or five or more drinks on any one occasion) during pregnancy also remained similar between 1995 and 1999.

There was no decline in drinking among non-pregnant women of childbearing age in 1995 and in 1999. Just over half of these women reported having at least one drink in the past 30 days, a percentage considerably higher than the rates for pregnant women. Rates of binge drinking among non-pregnant women were also higher than among pregnant women.

For all of the above trends in alcohol use, rates were slightly lower in 1997 than in 1999. (There is no discussion of this temporary decline.) The overall decline in drinking during pregnancy is consistent with the Canadian data discussed earlier.

[7] The CDC reported some data every two or four years rather than every year. In some analyses, data from multiple years are combined due to the relatively small sample size for pregnant women.

TABLE H1: Alcohol Use Trends in U.S. Women Between 1991 and 1999

	1991		1995		1997		1999	
Type of alcohol use	Pregnant	Non-pregnant	Pregnant	Non-pregnant	Pregnant	Non-pregnant	Pregnant	Non-pregnant
Rate of any alcohol use (at least 1 drink 30 days before survey)	12.4%	NR[a]	16.3%	53.2%	11.4%	52.8%	12.8%	53.3%
Rate of binge drinking (5 or more drinks on any one occasion)	NR	NR	2.9%	11.2%	1.8%	10.8%	2.7%	12.3%
Rate of frequent drinking (7 or more drinks per week or 5 or more drinks on any one occasion)	NR	NR	3.5%	NR	2.1%	NR	3.3%	NR

The CDC study reports the following observations relating to pregnancy status and drinking behaviour among women of childbearing age:

- Non-pregnant women and pregnant women who drank were similar in employment and marital status.
- Non-pregnant women who reported drinking any alcohol at all were more likely to be white and to have higher education levels than women who did not drink any alcohol.
- Non-pregnant women who reported either binge or frequent drinking were more likely to be under the age of 30.
- As compared with women who did not drink during pregnancy, those who did drink during pregnancy were more likely to be aged 30 or older, employed and unmarried (statistics based on combined data from 1995–1999 to achieve adequate sample size). This was true for any drinking, binge drinking and frequent drinking.
- Women under age 30 tend to reduce alcohol use when they find out they are pregnant, whereas women aged 30 and over are less likely to do so. The authors suggest that older women who do not change their alcohol consumption during pregnancy have greater alcohol dependency, and more difficulty cutting back or quitting drinking.
- The authors note that pre-pregnancy drinking patterns—especially heavy drinking patterns among women 30 and over—are highly predictive of drinking during pregnancy.

[a] Not reported

In light of the above findings, the CDC recommended that health-care providers routinely screen women of childbearing age for alcohol use, counsel them about the adverse effects of alcohol use during pregnancy, provide brief intervention, introduce broad public awareness campaigns, and provide social support through family, friends and community groups.

The CDC researchers point out a number of limitations of the above data. As with Canadian survey research, there is likely some underreporting, given that respondents may be aware of the negative effects of drinking during pregnancy. Also, telephone surveys miss women who are homeless, without phones or in institutions. As well, given the relatively small sample sizes of women who are both pregnant and using alcohol, prevalence estimates are subject to variability. The authors did not have sufficient sample size to assess the statistical significance of the comparison intervals presented in Table H1.

Substance Abuse and Mental Health Service Administration (SAMHSA) Data

SAMHSA has done extensive data collection on substance use (i.e., use of alcohol, tobacco and illicit drugs) and mental health issues and treatment in the United States. SAMHSA's various reports present pertinent data from the *National Household Survey on Drug Abuse* (NHSDA)[9] and the Drug and Alcohol Services Information System (DASIS).

Substance Use Behaviour Patterns

For the NHSDA, about 70,000 interviews are conducted with members of the civilian, non-institutionalized population aged 12 and older. Interviews are conducted face to face in the person's residence, with computer-assisted technologies to allow for privacy in answering sensitive questions, particularly about illegal drug use. However, the sampling procedure does exclude some populations that may contain a certain percentage of substance users, such as homeless people who do not use shelters, and people in prisons (Substance Abuse and Mental Health Services Administration [SAMHSA], 2002a).

SAMHSA releases many brief reports of three pages each. Summarized information from selected relevant reports is presented below. The titles of reports are used as subheadings to guide the reader.

[9] This survey has recently been renamed the National Survey on Drug Use and Health.

Substance Use Among Pregnant Women During 1999 and 2000

Substance Use Among Pregnant Women During 1999 and 2000 (SAMHSA, 2002a) combines data from the 1999 and 2000 surveys. It is based on information obtained from face-to-face interviews with 138,470 people aged 12 or older (about 70,000 each year), including 223 pregnant females aged 15 to 17, 1,495 pregnant women aged 18 to 25, and 669 pregnant women aged 26 to 44.

This report showed the following:

- An estimated 12% of pregnant women aged 15 to 44 had used alcohol in the month before the interview.
- Pregnant women were less likely than non-pregnant women to report either past month alcohol use or binge alcohol use. This was especially apparent in the 18-to-25 age group, where 4.8% of pregnant women reported binge drinking, versus 29.6% of non-pregnant women.[10]
- In the previous month, 3% of pregnant women had used an illicit drug.[11]
- Pregnant women aged 18 to 25 (5.5%) and pregnant women aged 26 to 44 (1.3%) were much less likely than non-pregnant women in the same age groups (13.0% and 4.9%) to use illicit drugs. However, rates of drug use were similar between pregnant and non-pregnant women age 15 to 17 (12.9% versus 13.5%). Figures H1 and H2 illustrate age differences in the prevalence of substance use among pregnant and non-pregnant women.
- Pregnant women were most likely to use alcohol or drugs in the first trimester of pregnancy, and least likely to use in the third trimester (see Figure H3).

[10] This SAMHSA report did not present overall binge drinking prevalence for pregnant women including the entire 15-to-44 age range.

[11] Illicit drugs include marijuana (including hashish), cocaine (including crack), heroin, hallucinogens (including PCP and LSD), inhalants, or any prescription-type psychotherapeutic used non-medically.

FIGURE H1: Drinking Patterns of U.S. Women by Pregnancy Status and Age

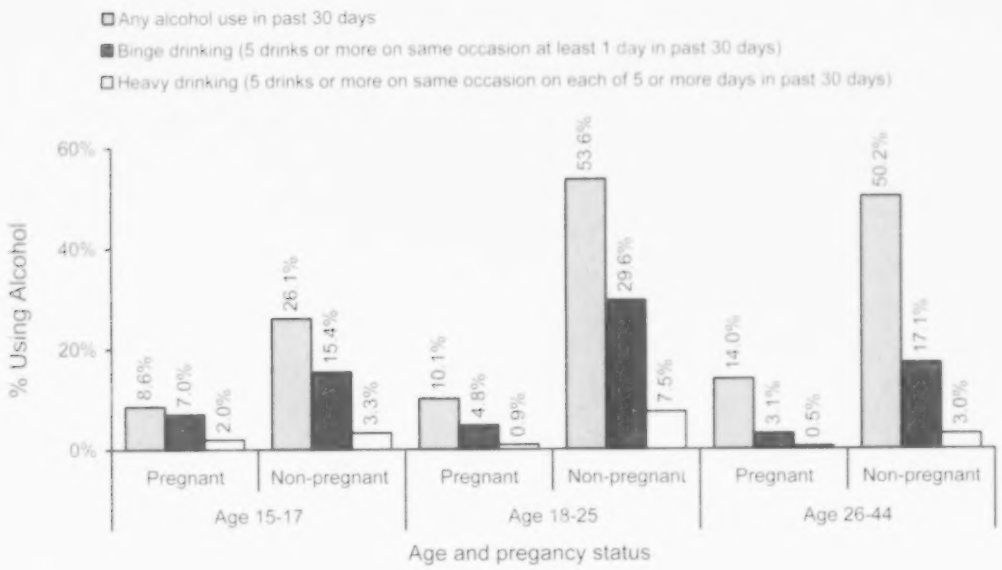


FIGURE H2: Street Drug Use Patterns of U.S. Women by Pregnancy Status and Age

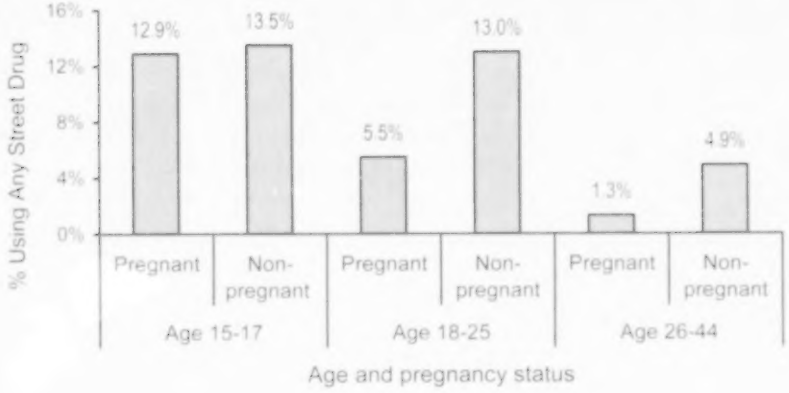
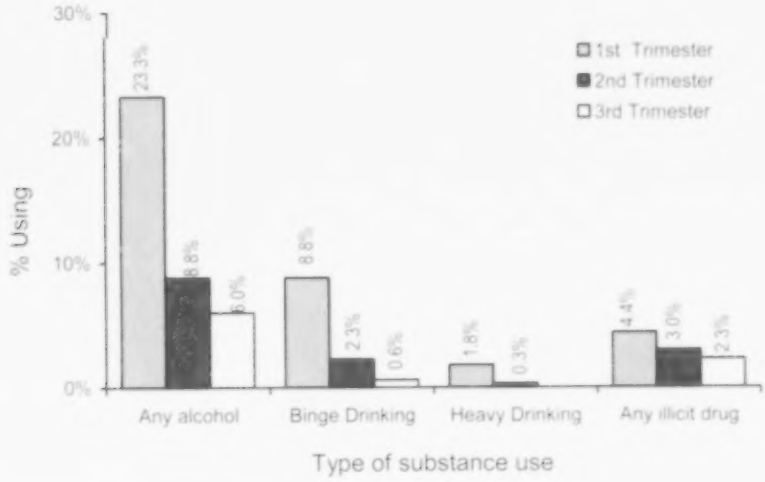


FIGURE H3: Substance Use Patterns of U.S. Women by Trimester

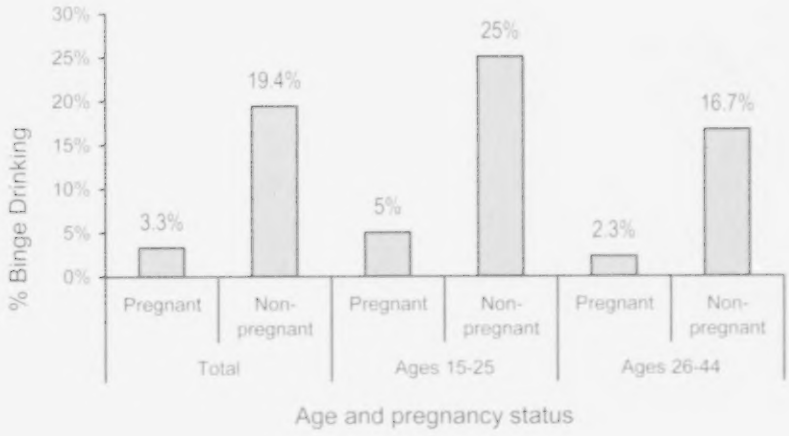


Tobacco and Alcohol Use Among Pregnant Women

Another NHSDA study conducted in 1999, *Tobacco and Alcohol Use Among Pregnant Women* (SAMHSA, 2001a), is based on information obtained from nearly 70,000 people aged 12 or older, including 832 pregnant females aged 15 to 25 and 305 pregnant women aged 26 to 44. This study found that

- About 13% of pregnant women reported drinking alcohol in the month before the survey.
- Three per cent of all pregnant women aged 15 to 44 reported binge drinking.
- The binge-drinking rate was about six times lower for pregnant women than among non-pregnant women (3.3% versus 19.4%).
- Binge drinking among pregnant women was five times lower than among non-pregnant women in the 15-to-25 age range (5.0% versus 25.0%), and eight times lower among women aged 26 to 44 (2.3% versus 16.7%) (Figure H4).

FIGURE H4: U.S. Women Binge Drinking by Age and Pregnancy Status



This SAMHSA (2001a) study also found that rates of binge drinking for recent mothers (women aged 15 to 44 with a child younger than one year) were slightly lower than the rate for non-pregnant women aged 15 to 44 (16% versus 19%). Both these rates are much higher than the 3.3% rate for pregnant women shown in Figure H4.

As well, the rate of heavy drinking among recent mothers was lower than among non-pregnant women (2% versus 4%). Again, these rates were higher than for pregnant women (0.2%).

Overall, these U.S. results suggest that many women likely reduce binge drinking and heavy drinking during pregnancy, though this occurs less for younger women. These findings are similar to Canadian patterns. However, once the baby is born, fewer U.S. mothers curtail binge drinking. Population research on this type of drinking relapse is needed in Canada.

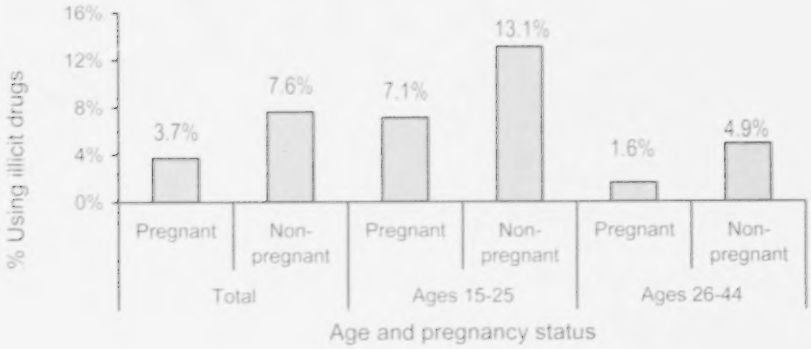
Pregnancy and Illicit Drug Use

The NHSDA report *Pregnancy and Illicit Drug Use* (SAMSHA, 2001b), also based on the 1999 sample, found that 3.7% of pregnant women aged 15 to 44 used illicit drugs (street drugs) in the month before the survey, versus 7.6% of non-pregnant women. As well, 4.5% of recent mothers (women aged 15 to 44 with a child younger than one year) reported using an illicit drug.

The most common drug used by pregnant women was marijuana (2.8% had used it in the past month, versus 5.5% of non-pregnant women and 2.6% of recent mothers). Among the pregnant women using drugs, 3.4% had used one drug, and 0.3% had used two or more. The rate of drug use was five times

higher among younger than older pregnant women (7.1% versus 1.6%) (Figure H5).[12]

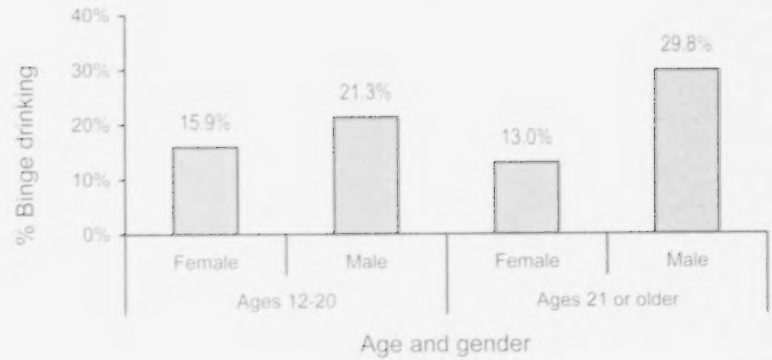
FIGURE H5: U.S. Women Illicit Drug Use by Age and Pregnancy Status



Binge Drinking Among Underage Persons

The main focus of *Binge Drinking Among Underage Persons* (SAMHSA, 2002b) was on differences between young males and females in terms of binge drinking. Comparisons were made between underage drinkers (under age 21 in the U.S.) and adults age 21 and older. Gender differences were less pronounced among respondents aged 20 or younger (15.9% for females versus 21.3% for males) than among respondents aged 21 or older (13.0% for females versus 29.8% for males). Women under age 21 were somewhat more likely to report binge drinking than those aged 21 or older (15.9% versus 13.0%) (Figure H6).

FIGURE H6: Binge Drinking Among Underage and Legal Age U.S. Women and Males



[12] These data were not presented for recent mothers.

The survey also found that the 43% of respondents (both female and male) under age 21 who reported binge drinking were more likely to also report illicit drug use. In contrast, 6% of underage respondents who did not binge drink reported illicit drug use.

Another interesting survey finding was that for those aged 18 to 22, the binge-drinking rate was higher among full-time college students (41%) than among those who were not full-time students (36%).

Treatment for Substance Abuse

The *Treatment Episode Data Set* (TEDS) is a component of the Drug and Alcohol Services Information System (DASIS) mentioned earlier. The TEDS records admissions to treatment facilities in the U.S. that receive some portion of public funding. Selected DASIS report information is summarized below.

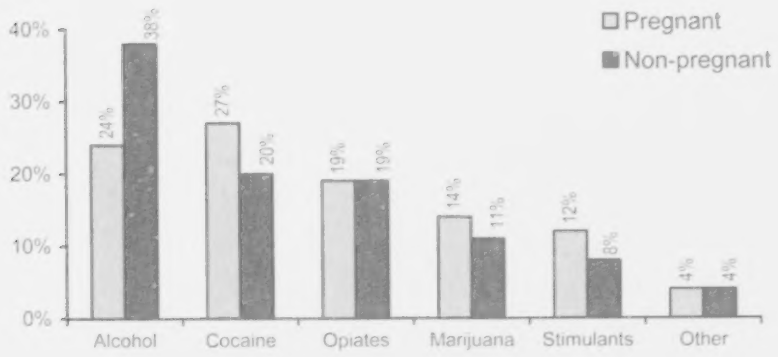
Pregnant Women in Substance Abuse Treatment

This DASIS report *Pregnant Women in Substance Abuse Treatment* (SAMHSA, 2002c), based on the 1999 TEDS, recorded more than 400,000 admissions of women of childbearing age (15 to 44 years) to substance abuse treatment facilities. Overall, about 4% of women between 15 and 44 years of age who entered publicly funded substance abuse treatment were pregnant.

Pregnant women tended to be younger on admission than non-pregnant women. Among pregnant women, 84% of admissions were under age 35, versus 59% of admissions among non-pregnant women.

Cocaine was the most common primary substance for pregnant women (27%), followed by alcohol (24%) and opiates (19%). For non-pregnant women, alcohol use was most common (38%), followed by cocaine (20%) and opiates (19%). See Figure H7 below for breakdowns of type of drug use by pregnant and non-pregnant women.

FIGURE H7: Primary Substance of Abuse for Pregnant and Non-Pregnant U.S. Women in Treatment

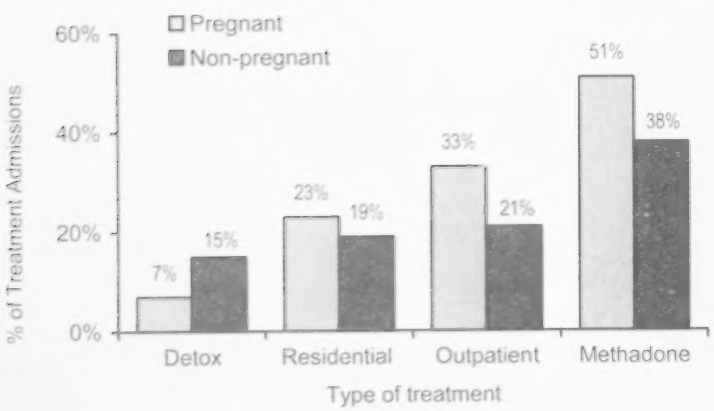


In only about 15% of admissions of both pregnant and non-pregnant women aged 15 to 44 were the women currently married (the report did not specify numbers living together but not married). The percentage of women who had never married was higher among pregnant than non-pregnant women (65% versus 54%, respectively).

In terms of types of treatment, pregnant women aged 15 to 44 comprised a smaller percentage of admissions to detoxification treatment than non-pregnant women. However, a greater percentage of residential treatment, outpatient admissions, and methadone treatment (for opiates) were for pregnant women (see Figure H8 for the comparisons). These higher residential treatment admission rates for pregnant women may be related to referral patterns.

The DASIS report notes that, from 1995 to 1999, self-referrals and referrals from health professionals decreased, while referrals through the criminal justice system increased. This shift was similar for pregnant and non-pregnant women, though somewhat more marked for pregnant women. In 1999, 28% of pregnant women were referred through the criminal justice system, versus 21% in 1995. For non-pregnant women, 27% were criminal justice referrals in 1999, versus 22% in 1995. Pregnant women were also more likely than non-pregnant women to be referred to treatment by health-care providers (though more so in 1999 at 14% than in 1995 at 11%). Only 9% of non-pregnant women were referred to treatment by health-care providers in both 1999 and 1995.

FIGURE H8: Substance Abuse Treatment Admissions Among Pregnant and Non-Pregnant U.S. Women



Dually Diagnosed Female Substance Abuse Treatment Admissions: 1999

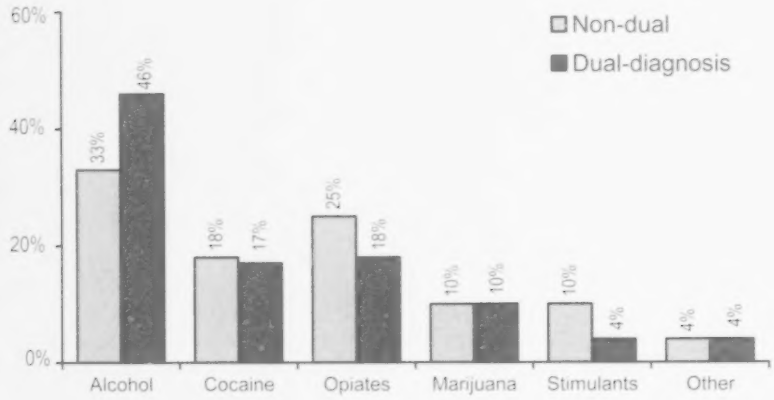
The DASIS report *Dually Diagnosed Female Substance Abuse Treatment Admissions* (SAMHSA, 2002d) examined relationships between admissions for substance abuse problems and psychiatric disorders. It is based on TEDS data

from 24 states with approximately 258,000 female admissions, about 20% (58,000) of whom were dually diagnosed in 1999.

The report was not specific to pregnant women or women of childbearing age. However, as substance use and mental health conditions are sometimes related, this information may be useful for service providers treating any women, including those currently pregnant or of childbearing age.

Women with dual diagnoses were more likely than those without dual diagnoses to have alcohol as their primary substance of abuse (46% versus 33%), and were either less or equally likely to have other drugs as their primary substance of abuse (Figure H9).

FIGURE H9: Primary Substance of Abuse for Dually and Non-Dually Diagnosed U.S. Women in Treatment



Women with and without dual diagnoses were equally likely to be married (17%). However, those without dual diagnoses were more likely to have never married (56% versus 48%).

For 55% of dually diagnosed females admitted to treatment, age at first drug use was younger than 18, versus 48% of non-dually diagnosed females admitted to treatment. For both groups, the average duration of use was about 13 years.

Dually diagnosed women were more likely to have had at least one prior treatment episode (72% versus 60%), and almost twice as likely to have had five or more prior treatment episodes (24% versus 13%).

Dually diagnosed women were less likely to be in the labour force than non-dually diagnosed women (39% versus 48%). Women with dual diagnoses were less likely to have been referred by the criminal justice system than women without dual diagnoses (17% versus 26%).

American Indians and Alaska Natives in Substance Abuse Treatment: 1999

The DASIS report *American Indians and Alaska Natives in Substance Abuse Treatment: 1999* (SAMHSA 2002e), addresses Aboriginal Americans.[13] Though not specific to pregnant women or women of childbearing age, it does contain gender-specific information that may be useful for service providers. There are no large data sets in Canada that cover Aboriginal treatment patterns.

About 43,000 treatment admissions of American Indians and Alaska Natives were reported to TEDS in 1999, from 48 states and the District of Columbia. This number represents 2.4% of the U.S. treatment population, as compared with the 1% of the U.S. population constituted by American Indians and Alaska Natives.

As compared with the proportion of women among all admissions (30% female versus 70% male), the proportion of women among American Indian /Alaska Native admissions was higher (35% female versus 65% male). Furthermore, American Indian /Alaska Native women were admitted in higher proportions for all substances than were women in the total treatment population.

[13] Most SAMHSA data focuses on black-white-Hispanic differences; these populations are proportionately much smaller and more dispersed within Canada than within the U.S. By contrast, there are large sub-populations of Aboriginal peoples in many parts of Canada (including Alberta and B.C.), and some services are specifically tailored to these groups.

I. Canadian Campus Survey

Given the trend toward greater alcohol use among younger women, it is instructive to briefly examine the report *Canadian Campus Survey 1998* (Gliksman, Adlaf, Demers, Newton-Taylor and Schmidt, 2000) that involved 7800 students at 16 universities. This study[14] assessed alcohol and drug use among full-time university students across Canada.

Rates of binge drinking among Canadian students were high (Table I1):

- 62.7% reported having five or more drinks at least once during the fall semester (56.1% for women, 70.6% for men).
- 34.8% reported having eight or more drinks over the same time frame (25.2% women, 46.5% men).

The study also noted how often students engaged in binge drinking (Table I1):

- The Canadian average was 4.7 times during the semester.
- Women drank five or more drinks on 3.2 occasions.
- Men drank five or more drinks on 6.6 occasions.

TABLE I1: Binge Drinking During One (Fall) Semester — Canada

	Five or more drinks		Eight or more drinks
	%	Occasions	%
Male	70.6%	6.6	46.5%
Female	56.1%	3.2	25.2%
Total	62.7%	4.7	34.8%

At 69.5% for five or more drinks and 44.6% for eight or more drinks, rates of binge drinking were higher among Prairie students than among Canadian students as a whole (Table I2). B.C. rates were a bit below Canada rates for five or more drinks (58.6%), and similar to Canada rates for eight or more drinks (35.2%). (Regional data were not reported by gender.)

In terms of how often students engaged in binge drinking, Canadian students binge drank less often overall (4.7 occasions) than students in B.C. (5.2) or the Prairies (6.3). Trends for drinking eight or more drinks per occasion were similar across regions, though this level of binging was less frequent.

[14] Use of the terms "the study," "the authors," or "the report" in this section refers to the source document *Canadian Campus Survey 1998*.

TABLE I2: Binge Drinking During One (Fall) Semester — by Region

	Five or more drinks		Eight or more drinks
	%	Occasions	%
Prairies	69.5%	6.3	44.6%
B.C.	58.6%	5.2	35.2%
Canada	62.7%	4.7	34.8%

Overall, the findings suggest that women binged less than men, off-campus students binged less than those in residence, and academically oriented students drank less than those who were recreationally inclined. Year of study was not related to binge drinking.

J. Environics Survey of Awareness of Effects of Alcohol Use During Pregnancy and Fetal Alcohol Syndrome

For the national survey *Awareness of the Effects of Alcohol Use During Pregnancy and Fetal Alcohol Syndrome: Results of a National Survey* (Environics Research Group, 2000) researchers interviewed 1,205 people (902 women and 303 men), and included women of childbearing age (defined as 18 to 40), and male partners of women in this age group. The survey examined[15]

- knowledge and beliefs about alcohol use during pregnancy
- awareness of fetal alcohol syndrome (FAS) and fetal alcohol effects (FAE)
- recall of information and preferences for information sources about the impact of alcohol
- support for public information initiatives
- expected behaviours of women and their male partners during pregnancy

The survey report[16] includes recommendations concerning directions for communications initiatives.

Awareness, Knowledge, and Beliefs About Alcohol Use During Pregnancy

Most Important Things Pregnant Women Can Do to Improve Their Health

About half the survey respondents (52%) mentioned, without prompting ("top-of-mind"), that cutting down or stopping alcohol use was one of the most important things pregnant women can do to increase the likelihood that their baby will be born healthy. As shown in Table J1, change in drinking behaviour was third behind good nutrition (75%) and cutting down or stopping smoking (63%). Fourteen per cent of respondents mentioned cutting down or stopping drug use.

More men than women said cutting down or stopping alcohol use is an important thing pregnant women can do to increase the likelihood that their baby will be born healthy (58% versus 50%). However, young women (aged 25 to 29), and those with the lowest levels of education and income were less

[15] In the source document, percentages were not reported on some items.

[16] Use of the terms "the study," "the authors," or "the report" in this section refers to the source document *Awareness of the Effects of Alcohol Use During Pregnancy and Fetal Alcohol Syndrome: Results of a National Survey*.

likely to mention cutting down or stopping alcohol use. Alberta women were more likely than other Canadian women to mention this.

When asked directly (prompted) about specific behaviour changes, 60% of respondents said cutting down or stopping alcohol use was one of the most important things pregnant women can do to increase the likelihood that their baby will be born healthy. This was second only to quitting smoking (63%). Practising good nutrition was third (54%). When respondents were asked direct (prompted) questions, women were more likely than men to think this change in drinking behaviour was one of the most important things to do (61% versus 57%). As with the unprompted (top-of-mind) responses, Alberta women were more likely than other Canadian women to mention cutting down or stopping drinking.

TABLE J1: Behaviour Changes Believed Most Important for Having a Healthy Baby

Behaviour change	Unprompted response	Prompted response
Good nutrition	75%	54%
Cutting down or stopping smoking	63%	63%
Cutting down or stopping alcohol	52%	60%
Increasing or maintaining physical activity	25%	Not asked
Cutting down or stopping drug use	14%	Not asked
Visiting a doctor or health professional	11%	42%
Reduce exercise	5%	12%
Avoid second-hand smoke	1%	36%

Perceptions of Harm from Different Amounts of Alcohol Use

Survey respondents showed high awareness that more alcohol use is likely to be harmful (98%), that alcohol use can cause lifelong disabilities in a child (89%), and that these effects do not disappear as the child grows older (82%). However, women with lower education levels were more likely to believe that most of the effects of alcohol use on a child usually disappear as the child grows older.

There was much less agreement among respondents regarding the impact of small or moderate amounts of alcohol use, though women were less likely than men to think that small or moderate amounts of alcohol were safe (Table J2). Women from Alberta were more likely to see drinking during pregnancy as risky, and less likely to see small amounts of alcohol as safe.

Overall, both female and male drinkers were less likely to see drinking during pregnancy as harmful. Non-drinkers (as well as women under 30) were more likely to believe that *any* alcohol consumption during pregnancy can harm the baby.

TABLE J2: Beliefs About Drinking Small to Moderate Amounts of Alcohol During Pregnancy

Beliefs about small to moderate amounts of alcohol use	% Agree Total sample	% Agree Women	% Agree Men
Any alcohol consumption during pregnancy can harm the baby	66%	68%	59%
A small amount of alcohol use during pregnancy can usually be considered safe	51%	49%	57%
A moderate amount of alcohol consumption during pregnancy can usually be considered safe	25%	23%	30%
A small amount of alcohol consumption during pregnancy would never lead to serious harm to the baby	30%	28%	35%

When asked about specific amounts of alcohol consumption during pregnancy, respondents demonstrated a high degree of awareness about the negative effects of large amounts of alcohol on the baby. However, respondents were once again divided as to whether there are harmful effects from smaller amounts of alcohol use, as shown in Table J3.

TABLE J3: Beliefs About Drinking Specific Amounts of Alcohol During Pregnancy

Beliefs about specific amounts of alcohol use	% Agree Total Sample	% Agree Women	% Agree Men
It is not at all safe for a pregnant woman to drink one alcoholic drink each day during the pregnancy	69%	72%	58%
It is not at all safe for a pregnant woman to drink three or four alcoholic drinks each weekend during the pregnancy	68%	71%	59%
It is not at all safe to drink two alcoholic drinks on two or three different occasions during the pregnancy	27%	28%	24%
It is not at all safe to drink a total of one or two alcoholic drinks during the pregnancy	20%	21%	17%

Alberta women and younger Canadian women were more likely to think any amount is not safe. Women who drink more were less likely to think any amount of alcohol is not safe.

Knowledge of Fetal Alcohol Syndrome (FAS) and Fetal Alcohol Effects (FAE)

Seventy-one per cent of respondents said they had heard of FAS (72% for women, 68% for men). However, only 34% of respondents (both women and men) who were aware of FAS knew that it refers to the effects of alcohol on the fetus. Less than 25% were able to identify specific FAS-related developmental, disability or behavioural issues.

Fewer respondents (56%) had heard of fetal alcohol effects (FAE). Women were much more likely than men to be aware of FAE (64% versus 34%). As with FAS, less than 25% of respondents were able to identify specific developmental, disability or behavioural issues related to FAE.

For both FAS and FAE, the most educated female respondents reported more knowledge.

Recall of Information about the Effects of Alcohol Use During Pregnancy

Seventy-two per cent of respondents recalled seeing information about the effects of alcohol use during pregnancy on the baby. Women were more likely than men to have seen such information (74% versus 64%). Women with higher levels of education and income, as well as those who were mothers, were more likely to recall seeing information about drinking during pregnancy.

Regarding sources of information, women were more likely than men to mention brochures/pamphlets, a doctor/health-care professional, books, posters, magazine advertising, and school/special classes. Men were more likely to mention media programs/articles in newspapers or magazines, warnings on alcohol bottles and at vendors, and television advertising. Women from western and Atlantic Canada were more likely than other Canadian women to mention television advertising. Alberta women were more likely to mention a doctor or a health-care professional, whereas British Columbia women were more likely to mention posters and warnings on alcohol bottles or at vendors.[17]

Preferred Information Sources

Almost half the respondents (47%) said a doctor or doctor's office would be the best source of information for learning about FAS and the effects of alcohol use during pregnancy. This response was slightly more common for women (48%) than for men (43%). Far fewer respondents would look to other venues, or to visual or print materials, as their best source. Additional sources mentioned were books/magazines, health clinics/hospitals, TV programs or advertisements, Internet sources, and Health Canada flyers and pamphlets (Table J4).

[17] The information sources mentioned are consistent with a high-profile labelling campaign in B.C.

TABLE J4: Best and Additional Sources of Information on FAS and Other Effects of Alcohol Use During Pregnancy

Information channel	Best Source	Additional Sources
Doctor or doctor's office	47%	21%
Books or magazines	10%	28%
Health clinics or hospitals	9%	18%
TV programs or ads	8%	16%
Internet	5%	18%
Health Canada/ flyers & pamphlets	4%	7%
Library/school	1%	9%
Public health organizations/programs	1%	7%
Newspapers	1%	5%
Prenatal classes	1%	5%

Support for Information Initiatives

A large majority of respondents were strongly supportive of government-sponsored advertising, and the requirement that companies selling alcohol products warn consumers about the risks of drinking during pregnancy (through advertising and product labelling). There was less support for regulations directed at businesses that serve alcohol. Women were more likely than men to support these initiatives (Table J5).

TABLE J5: Support for Information About Risks of Alcohol Use During Pregnancy

Type of Initiative	% Strongly approve Total Sample	% Strongly approve Women	% Strongly approve Men
Government-sponsored advertising describing the effects and warning about the risks of alcohol use during pregnancy	78%	81%	70%
Requiring messages in alcohol advertising to warn about the risks of alcohol use during pregnancy	73%	76%	62%
Requiring labels on alcohol products warning about the risks of alcohol use during pregnancy	66%	69%	57%
Requiring signs in bars and clubs warning about the risks of drinking during pregnancy	55%	57%	46%
Requiring signs in restaurants warning about the risks of alcohol use during pregnancy	40%	42%	33%

Those most likely to strongly approve of the various initiatives were older women, mothers, and women who drink less. Women with more education were *less* likely to strongly approve of these initiatives, with the exception of government-sponsored advertising. British Columbia women were more likely than other Canadian women to strongly approve of requiring signs in restaurants and in bars and clubs warning about the risks of alcohol use during pregnancy.

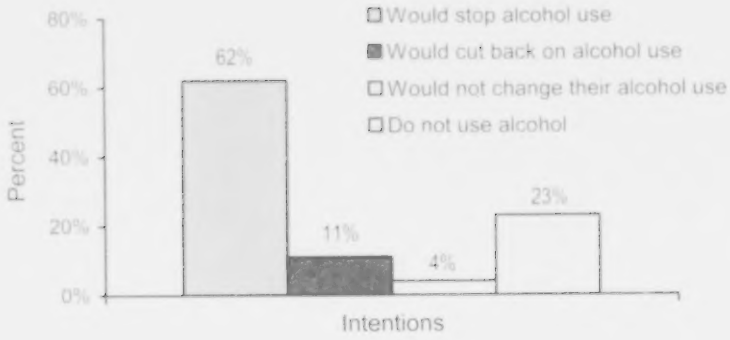
Drinking Intentions and Behaviours

Intentions and Behaviours of Women Currently Pregnant or Anticipating Pregnancy

Female respondents were asked about their intentions concerning their drinking behaviour if they were to become pregnant. Overall, 85% of women said they would not drink alcohol during pregnancy. Most indicated that they would stop using alcohol if they were to become pregnant (62%). A smaller percentage of

respondents said they would cut back on their alcohol use (11%), and 4% said they would not change their alcohol use (Figure J1).

FIGURE J1: Intentions Regarding Alcohol Use During Pregnancy for Total Sample of Respondents



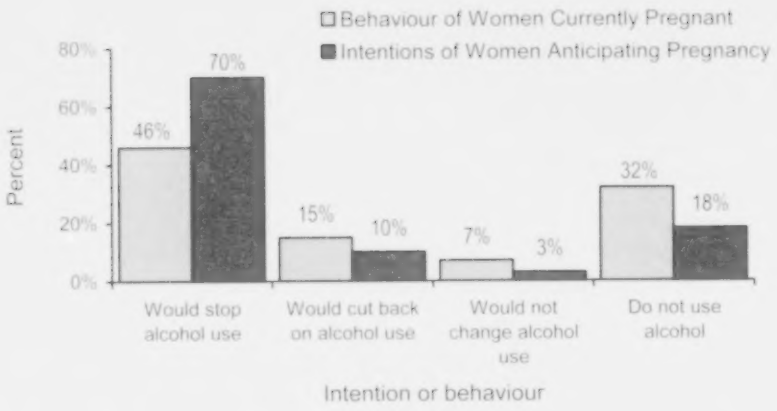
Women with more education and younger women were more likely to say they would stop using alcohol if they were to become pregnant. However, women with less education were more likely to say they do not drink at all. Women who are more affluent, and those who drink more alcohol, were more likely than others to say they would cut back (rather than quit) using alcohol. Among the female survey respondents, 6% reported being currently pregnant, and another 42% said they might become pregnant in the future. Among the respondents who were pregnant when surveyed, 78% were not using alcohol; they had either stopped using it or did not consume it at all. However, 22% of pregnant survey respondents were still using alcohol to some extent, though two-thirds of these (15%) had cut back (Figure J2).[18]

Among the women who were anticipating future pregnancy, about 88% said either that they would stop drinking, or that they do not use alcohol. However, about 13% would still use alcohol to some degree, with most cutting back (Figure J2).[19]

[18] Only 54 survey respondents reported that they were currently pregnant; therefore, caution is advised when interpreting these findings.

[19] Percentages may not total exactly 100%, because of rounding.

FIGURE J2: Behaviours or Intentions of Women Who Are Either Currently Pregnant or Anticipating Future Pregnancy



Note that according to Figure J2, the currently pregnant women were more likely to continue drinking to some degree, as compared with the intentions of women who anticipated future pregnancy. This discrepancy may be a function of the actual difficulties faced when attempting to quit drinking during pregnancy, as opposed to expressing intentions not to drink. However, given the small number of currently pregnant women in the survey, these findings must be interpreted with some caution.

Influence of Support from Male Partners

Thirty-nine per cent of women said they would reduce alcohol use during pregnancy if their spouse or partner encouraged them to stop or cut back. However, an equal number said this would not affect their alcohol use.

A majority of women said they would *not* be influenced if their partner

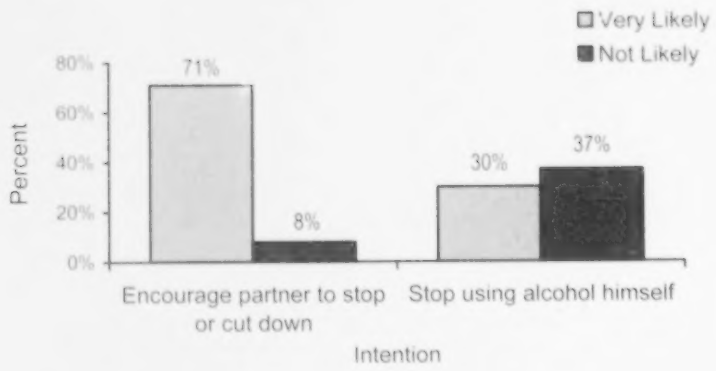
- continued to drink during their pregnancy (69%).
- offered them a drink during their pregnancy (61%).
- stopped drinking during their pregnancy (57%).

In other words, most women do not feel that their partner's drinking behaviour would affect their drinking behaviour.

Younger women (aged 18 to 24), women with more education, and women who drink more alcohol were more likely to say they would be *positively* influenced by their partner's encouragement, and by his own efforts to stop consuming alcohol. This latter point suggests the greater importance of partner social support for some groups.

Figure J3 illustrates the intentions of male partners regarding support and drinking behaviour during a woman's pregnancy. Almost three-quarters of male respondents (71%) said they would be very likely to encourage their pregnant spouse or partner to stop or cut back on her alcohol use during the pregnancy. However, fewer men (30%) said they would be very likely to stop drinking alcohol themselves during their spouse's or partner's pregnancy (37% said they would *not* likely stop drinking themselves).

FIGURE J3: Intentions of Male Partners for Support and Drinking Behaviour During a Woman's Pregnancy



Environics Conclusions About Communications Implications of Their Survey

Environics summarized a number of communications implications of their survey findings. There was widespread awareness among survey respondents that alcohol use during pregnancy is harmful to an infant, and that the more alcohol consumed, the more likely and extensive the harm may be.

However, there was less agreement among respondents regarding the effect of small and moderate amounts of alcohol use during pregnancy. Respondents also displayed low levels of specific knowledge about FAS and FAE (e.g., the types of disabilities involved). In light of those findings, Environics suggested that communication initiatives need to focus on the risk of drinking even small amounts of alcohol during pregnancy, and on raising awareness of specific disabilities related to FAS.

Environics noted that an important group to reach is women who consume greater amounts of alcohol. The survey showed that women who regularly consumed four or more drinks per week were less likely to believe that alcohol use during pregnancy is harmful. Female respondents who had four or more drinks per week were more likely to be younger, single, or with higher

household income levels. There were no significant regional differences in alcohol consumption.

Survey results also confirmed the importance of health professionals and health settings, such as clinics aad hospitals, as the sources of information about the effects of alcohol use most often sought. However, many types of media were also important information sources, including brochures, pamphlets, articles in magazines and newspapers, and television advertising. Environics thus suggested that efforts should be made to create print materials for distribution to health-care providers and settings, and develop materials and strategies to increase awareness of the topic in the general media.

Survey findings further suggested that communications initiatives need to be appropriate for women across a range of socio-economic and education groups, but with a greater emphasis on women with middle-to-lower levels of education, whose knowledge and awareness levels may be lower.

The survey also demonstrated that males have lower levels of knowledge than their female partners. Environics concluded that communications directed toward men should build knowledge and awareness of the effects of alcohol use, and also emphasize the importance of providing support and encouragement to their partners to stop drinking during pregnancy.

K. Fetal Alcohol Syndrome: A National Survey of Health Professionals

A survey on FAS entitled *Fetal Alcohol Syndrome: A National Survey of Health Professionals* (Clarke and Tough, 2003) was conducted with the purpose of obtaining information from health professionals (including pediatricians, psychiatrists, midwives, family physicians and obstetrician-gynecologists) about their current knowledge and attitudes regarding fetal alcohol syndrome.

The results show that the majority of those health professionals surveyed believe that

- the effects of alcohol are clear (74.9%).
- FAS occurs in all strata of society (95.4%).
- prenatal alcohol exposure is a risk for permanent brain damage (93.3%).

Most of the health professionals surveyed also agree with telling non-pregnant women to drink in moderation (60.7%).

Further results indicate that health providers generally advise the use of alcohol "in moderation," but do not define the actual amounts of alcohol to be consumed.

Seventy-nine per cent of midwives, 84% of obstetrician-gynecologists and 90% of family physicians recommend no alcohol during pregnancy.

Health providers identify a lack of time as the key barrier in discussing alcohol consumption with women of childbearing age.

More than 60% of the health service providers surveyed believe a registry of specialists for consultation, referral resources, and clinical practice guidelines would be helpful in their practice. Only 25% wanted training in addictions counselling, assistance with diagnosis, or access to information via telemedicine.

L. Canadian Tobacco Use Monitoring Survey (CTUMS)

More recent information on smoking in Canada is contained in the findings of the *Canadian Tobacco Use Monitoring Survey (CTUMS)* (Health Canada, 2002). This telephone survey included 1,012 women and 901 men in Alberta, and 1,246 women and 1,089 men in B.C. The data[20] on smoking during pregnancy were based on women who had been pregnant in the five years prior to the survey. This data is not available by province due to the small sample sizes, but is available for Canada as a whole (n = 12,681 women, 10,660 men).

Among Canadian women aged 20 to 44, 11% had smoked regularly (daily) during their most recent pregnancy. However, smoking during pregnancy was more common among younger women (defined as age 15 to 24). Almost a quarter (24%) of younger women had smoked during their last pregnancy. The higher smoking prevalence among younger women is consistent with other data indicating that substance use is more common among youth.

CTUMS also asked about spousal smoking in the home during the woman's most recent pregnancy. Among women aged 20 to 44, 13% had a spouse who smoked regularly in the home during their last pregnancy. Among 15- to 24-year-old women, 20% had a spouse smoking in the home when they were last pregnant.

In addition to inquiring about smoking during pregnancy, CTUMS asked about exposure of children to environmental tobacco smoke (ETS) in the home. Data from this question is available for Alberta and B.C. as well as for Canada as a whole, as shown in Table L1. In all three jurisdictions, it appears that parents were more likely to protect younger children from ETS. Overall, B.C. children were less likely to be exposed to ETS than children in Alberta or Canada overall (which had similar rates).

TABLE L1: Children's Exposure to Environmental Tobacco Smoke (ETS) in the Home

	% Children 0-11 regularly exposed to ETS	% Children 12-17 regularly exposed to ETS	% Children 0-17 regularly exposed to ETS
Alberta	15%	21%	17%
B.C.	6%	14%	9%
Canada	16%	23%	19%

[20] Use of the terms "the study," "the authors," or "the report" in this section refers to the source document *Canadian Tobacco Use Monitoring Survey (CTUMS) Annual results summary: Supplementary Tables*.

The CTUMS presents overall current smoking rates (daily and occasional), and amount smoked for various age groups by province. Women of childbearing age include the 15-to-19, 20-to-24 and 25-to-44 age groupings.

Tables L2 through L4 summarize Alberta, B.C. and Canadian findings for women and men across the age groups. Female smoking prevalence in Alberta is near or above the rates for Canada as a whole, whereas male rates in Alberta are near or below the national rates. B.C.'s smoking prevalence for both sexes is considerably lower than either Alberta or Canada. Among women in Alberta and Canada, there is a much higher smoking prevalence among those aged 20 to 24 than among either the younger or the older age groups. This pattern does not appear in B.C. Overall, men in all three jurisdictions and age groups smoke more cigarettes per day than the women.

TABLE L2: Smoking Prevalence and Patterns Among Albertans Aged 15-44

	Women			Men		
	15-19	20-24	25-44	15-19	20-24	25-44
Current smoker	22%	33%	26%	16%	26%	26%
Avg. cigs per day	10.7	11.6	13.3	N/A	15.4	17.4

TABLE L3: Smoking Prevalence and Patterns Among British Columbians Aged 15-44

	Women			Men		
	15-19	20-24	25-44	15-19	20-24	25-44
Current smoker	16%	18%	18%	13%	26%	23%
Avg. cigs per day	12.8	12.3	14.7	N/A	14.3	17.6

TABLE L4: Smoking Prevalence and Patterns Among Canadians Aged 15-44

	Women			Men		
	15-19	20-24	25-44	15-19	20-24	25-44
Current smoker	23%	30%	23%	21%	31%	27%
Avg. cigs per day	11.7	11.8	14.9	14.4	16.1	17.5

M. Canadian Contraception Study 1998

The Canadian Contraception Study 1998 (Fisher, Boroditsky and Bridges, 1999) focuses on women aged 15 to 44.[21] In this study,[22] the sample was drawn from a panel of 60,000 households previously selected for survey research. Of 2,893 surveys mailed out, 1,599 were returned, for a response rate of 55%. Responses were weighted to be representative by region and age within marital status, based on Canadian census data.

Most respondents were familiar with oral contraceptives (the pill) and condoms as birth control methods (96% and 91%, respectively). Fewer were familiar with most other commonly used methods of birth control, such as the IUD or the female condom (40% to 64%). Among those familiar with the pill, 64% were very favourable toward it. Among those actually using the pill at the time, 84% were very favourable to it, and 73% were very satisfied with it.

Among those who had had intercourse in the previous six months and had used contraception, 43% had used the birth control pill. The study authors note that pill use was lower in the Prairies and B.C. combined (38%) than elsewhere in Canada (61% in Atlantic Canada, 46% in Quebec and 41% in Ontario).

A similar percentage of respondents who had had intercourse in the previous six months had used condoms (44%). Both pill and condom use were almost twice as high among unmarried than married women, and condoms were more popular among unmarried teens, as seen in Figure M1 (adapted from Table 2.2 in *Canadian Contraception Study 1998*). Among those who had used condoms, about 60% had also used some other method.

[21] Results for 2001 were not yet available at the time the present report was being produced. The 2001 results are expected in late 2003, and will be available through the Sex Information and Education Council of Canada (www.siecan.org). SIECCAN was not expecting major changes from the 1998 findings.

[22] Use of the terms "the study," "the authors," or "the report" in this section refers to the source document *Canadian Contraception Study 1998*.

FIGURE M1: Condom and Birth Control Pill Use by Age Within Marital Status

Women were neutral regarding the convenience and awkwardness of using condoms and the effect of condoms on enjoyment of sexual activity (ratings between 3 and 4 out of 6).[23] As well, women slightly disagreed with a statement that it would be difficult to get their partner to use a condom (rating of 2.85 out of 6).

However, actual use of condoms was not consistent. Less than 20% of women who had had intercourse in the previous six months always used condoms. Consistent use was higher among unmarried than married women (26% versus 13%). Of concern is that only 40% of unmarried women aged 15 to 17 reported using condoms consistently.

Among women presently using oral contraceptives, 35% reported having two or more sexual partners during the past two years, suggesting that there is "a sizable potential for risk of STD (sexually transmitted disease) among unmarried pill users, particularly those who are 'serially monogamous' and may be less inclined to use condoms and the pill" (Fisher et al., 1999, p.184). More than a quarter of women believed that having only one partner, or knowing one's partner well, eliminated the need for condoms.

Among respondents who had had intercourse in the previous six months, 29% had not used any contraception. (Only about a third of these women were pregnant or trying to conceive.) In general, consistent use of contraception over the previous six months was lower among those with less education.

Unmarried women (69%) were more likely than married women (54%) to regularly use most forms of contraception. However, only 60% of 15- to 17-year-old unmarried teens said they had always used contraception during the previous six months. Younger women were also more likely to use unreliable

[23] A six-point Leikert scale was used to measure agreement on a number of dimensions. A score of six on the six-point scale equates to "strongly agree."

contraceptive methods; for example, withdrawal was used by 22% of unmarried 15- to 17-year-olds, and 13% of unmarried 18- to 24-year-olds, versus 9% of women overall.

Age is a factor in both familiarity with and use of birth control methods. For example, barrier methods are less important for women in their later reproductive years. The authors note that condoms are more often used early in a woman's sexual life for protection against STDs. Once in a monogamous relationship, women often stop using condoms, usually because they want a more effective or permanent method (the pill and sterilization are the most common choices). However, it is important to recognize that condoms still play an important role in preventing STDs. The study's authors point out that this message is especially important for women entering new sexual relationships after years of monogamy.

The authors also note that women's knowledge of contraception has decreased over the last 15 years, especially for methods other than the condom and pill. They emphasize that health professionals and educators must help to increase awareness of the benefits and risks of a full range of birth control options, so that women and their partners can make informed choices based on their needs, risk factors and medical conditions.

For example, the study found that only 21% of women were familiar with injectable contraception, and that less than 1% were using it. The authors suggest that this method, which requires only four injections a year, may be good for women who might forget to take pills. However, because injectable contraception may also be attractive to young women who may not adhere to safer sex guidelines, the authors advise addressing the issue of safer sex among this population. Women were also much less familiar with, and less likely to use, such methods as the IUD, the diaphragm, the morning-after pill, and the female condom. As each of these methods may work well for particular women, the authors suggest that women need to be more knowledgeable about each of these methods so they can make informed choices.

N. Surveys on Violence Against Women, 1993 and 1999

The 1993 *Violence Against Women Survey* (Statistics Canada, 1993) found that 51% of Canadian women had experienced at least one incident of physical and sexual violence since the age of 16, and that of those women, almost 60% were the victim of more than one such incident. A *General Social Survey* conducted by Statistics Canada in 1999 examined multi-faceted crime victimization, with a sample size of 25,876. The five-year prevalence of spousal assault against women for Canada was 12% in 1993 and 8% in 1999. Alberta rates were higher for both years (14% and 11%, respectively). It is speculated that the decline may be related to any of the following:

- increased use of services by women;
- increased public awareness;
- improved training for police officers and Crown attorneys;
- co-ordinated interagency referrals in many jurisdictions;
- increased number of treatment programs for Aboriginal men;
- positive changes in women's social and economic status that may enable them to leave abusive relationships at earlier stages; and/or
- mandatory charging or prosecution policies in spousal assault cases (Status of Women Canada, 2002).

It should be noted that the rates of spousal assault for Aboriginal women were twice as high as for Aboriginal men, and three times higher than for non-Aboriginal women and men.

Alberta studies have linked violence against girls and women to entry into prostitution (Nixon, Tutty, Downe, Gorkoff, and Ursel, 2002), and to use of alcohol and other drugs, as well as to help-seeking behaviour (Radner, 1995).

Violence against women is common during pregnancy. Twenty-one per cent of women in Canada who reported being abused by an intimate partner said they were abused during pregnancy (Rodgers, 1994).

O. Profile of High-Risk and Pregnant Women from Program and Research Sources

To add to the profile provided by surveys, we have included information on women seeking help from services designed to assist high-risk women. The following six services and studies were chosen:

- Aventa Treatment Centre in Calgary, an alcohol and drug treatment centre serving women, which served 37 pregnant women in 2002 (Aventa Treatment Centre, 2003).
- First Steps, a community-based program in Edmonton designed specifically to help women at risk of giving birth to a child with fetal alcohol spectrum disorder (First Steps Fetal Alcohol Spectrum Disorder Program, 2003).
- Sheway, a program designed to reach high-risk pregnant women in the Downtown Eastside of Vancouver, and for which comprehensive evaluation data has been published (Poole, 2000).
- Breaking the Cycle, a Toronto-based program with comparable goals to First Steps and Sheway, and for which comprehensive published evaluation data also exist (Pepler, Moore, Motz and Leslie, 2002).
- A province-wide study of pregnant women in Manitoba, sponsored by Manitoba Health in 1999 (Tait, 2000).
- The Washington State Moms Project, a research and demonstration project sponsored by the National Institute on Drug Abuse as one of 21 perinatal projects funded nationally in the 1990s in the U.S. (Washington State Moms Project Perinatal Research and Demonstration Project, 2002). This project involved a randomized, unblinded trial of three different modes of treatment, two of which provided a comprehensive women-specific treatment approach.

The data profiling high-risk pregnant women are provided in Appendix 1. The programs and studies did not provide information on all variables, and did not use comparable definitions in each area. In spite of these limitations, there was a consistent indication that the concerns facing these women are considerably more complex than substance use alone.

Age

Programs served women of all ages within the range of childbearing years. The Alberta-based programs were reaching more women in the youngest age groupings.

Relational and Social Support

Most programs gathered information on marital status, and found that most women were not married. More useful to service planning and delivery would be information on whether women are single parents or in primary relationships (whether married or not), and which (if any) other types of people they turn to for support.

Income, Education and Employment

The women seeking treatment or support services had low, if any, income. They often had lower levels of education, and were not employed in the paid labour force.

Motherhood Status

Many women obtaining service had already had children, many were parents, and many had previously had children taken into custody by the child protection system. This underscores the potential for professionals, working with mothers through early childhood programming, to take a role in discussing substance use and other health risks with women of childbearing years, and to work collaboratively with child welfare agencies.

Substance Use

These programs and studies were focused on women who use substances, yet there was great variance in how substance use was reported. Notably, not all programs collected or highlighted tobacco use. There was no consistency in reporting types of drug use, or in reporting changes in substance use across trimesters or over the entire pregnancy. All programs profiled women who used their services as poly-drug users. High levels of cocaine, alcohol and tobacco use were reported in the Alberta-based programs. The First Steps program in Edmonton reported the most comprehensive information on the level and type of substance use by women entering the program, on the influences contributing to use, and on treatment/harm reduction outcomes. The First Steps program data shed light on intergenerational problems with alcohol, as well as the many other influences on women's substance use. Fifty-four per cent of First Steps clients indicated that their mothers drank heavily when the clients were children, and 14% indicated that their mothers were heavy drinkers while pregnant with them.

Other Health-Related, Legal and Social Problems

A constellation of other problems characterized these women's lives, including unstable housing, exposure to violence abuse, justice system involvement, and coexisting physical and mental health problems. The evaluation studies from Toronto, Vancouver and the U.S. all noted the importance of addressing these concurrent problems as fundamental to affecting women's substance use. This is consistent with a harm reduction approach, whereby influencing the harms associated with use is central to the initiation and maintenance of change in substance use itself.

P. Key Findings: Windows of Opportunity for Change

Alberta has a population of approximately 622,000 women of childbearing years, and between 36,000 and 38,000 births per year. Two-thirds of Alberta women live in the province's two major cities, Calgary and Edmonton. There are key differences in income and parental status between women of childbearing years and men; women who are single parents are more likely to have an income lower than that of two-parent families.

Through a comparative analysis of substance use patterns, as well as other related indicators such as violence and mental health, we have presented an extensive profile of substance use among women of childbearing age in Alberta. In this final section, we briefly summarize the key facts organized by the three levels of prevention: universal, targeted/selective and indicated (Alberta Alcohol and Drug Abuse Commission, 2002; Roberts, McCall, Stevens-Lavigne, Anderson, Paglia, Bollenbach, et al., 2001). A section of key findings related to research follows.

Within each prevention category we identify at least one *key finding* synthesized from the data, and an *implication* for consideration in policy and practice.[24]

Universal Prevention: Windows of Opportunity with Women of Childbearing Age

Key Finding

Substance use by women in their childbearing years is common, and risky drinking patterns, while less common, are found throughout the age and income spectrum.

Implication

Therefore, routine screening of all women of childbearing age should be implemented, along with public awareness campaigns to play an important educative role.

Examples

- In the Canadian Community Health Survey (CCHS), 79.9% of Alberta women of childbearing age reported use of alcohol in the past 12 months, and approximately 52% reported use in the week prior to the survey. Drinking behaviour by women of childbearing age in Alberta was found to

[24] Suggested implications must be considered against various decision criteria such as efficacy, effectiveness, efficiency and affordability.

be similar to and in some cases less common than such behaviour by Canadian women overall.

- Binge drinking and drinking more than nine drinks per week are drinking patterns that indicate higher risk for women. Approximately 18% of Alberta women reported binge drinking once per month or more. Almost 8% of Alberta women reported drinking more than nine drinks per week once per month or more.
- In the CCHS, a third of Alberta women of childbearing age reported use of tobacco. On most indicators, B.C. women reported smoking somewhat less frequently than Alberta women.
- In accordance with findings from other studies over many years, the CCHS shows higher levels of licit use by women than men in the selected categories of pain relievers, antidepressants, tranquillizers, sleeping pills and diet pills.
- Some differences were found in frequency and type of substance use by income and age, with some suggestion of concern at each end of the age and income spectrums. For example, smoking was more frequent among women with lower household incomes. Young women were more likely to binge drink more often. Women with the highest incomes more frequently reported drinking during pregnancy. Such information prompts us to reconsider some of our stereotypes of high-risk groups.
- The high prevalence of substance use among women in their childbearing years, and the spread of risky substance use patterns across the income spectrum, supports the widespread view (Alberta Medical Association, 2003; Health Canada, 2001) that health-care providers should *routinely* screen *all* women of childbearing age for alcohol use, and counsel them about the adverse effects of substance use during pregnancy.
- Training (and reinforcement of training) with health professionals in a position to discuss substance use with women is needed. In Alberta, some important attempts have been made in this regard. These initiatives include physician training regarding the *Alberta Clinical Practice Guidelines* on the prevention of FAS (Alberta Medical Association, 2003), and more recently, AADAC's publication and distribution of *The Help Kit*, a resource kit for professionals who work with women with substance use issues. Both initiatives include screening for substance use.
- From a holistic health perspective, it is important to link screening for relationship violence, for use of contraception, and for substance use. Furthermore, there is a concern about the lower use of contraception by younger women, who are also the most likely to binge drink.
- The survey undertaken by Environics Research Group in 2000 found that the vast majority of Canadians are aware of the risks of alcohol use during pregnancy. In Alberta, where public awareness campaigns on this issue

have existed for some time, women are more aware of the risks than other Canadian women, and have lower rates of drinking while pregnant than in other jurisdictions (e.g., according to the CCHS, 9.2% of Alberta women and 13.7% of Canadian women indicated that they drank during their last pregnancy).

- Linking the promotion of screening for women to the prevention of FASD on International FAS Awareness Day, held annually on September 9, could potentially bring even more attention and support for this work. The broad model used in the U.S. by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) and the Substance Abuse and Mental Health Services Administration (SAMHSA) for their annual National Alcohol Screening Day might help to achieve goals for increasing awareness and action.

Targeted/Selective Prevention: Windows of Opportunity with Pregnant and At-Risk Women

Key Finding 1

The vast majority of pregnant women do not use alcohol during pregnancy, make efforts to improve their health, and find the support they need.

Implication

Because women are clearly open to changes in substance use behaviour during pregnancy, this is a brief but excellent opportunity for influencing women.

Examples

- When we compared the substance use patterns of pregnant and non-pregnant women on all indicators reviewed in this report, we learned that, as a group, **women change their substance use behaviour during pregnancy, by either quitting or cutting down**. This is evident in the consistently lower numbers of pregnant women who smoke or use alcohol as compared with non-pregnant women. Another good indicator of this behavioural change among pregnant women is that half of the women who had ever consumed more than 12 drinks per week, and who were currently pregnant at the time of the survey, identified *pregnancy* as the factor that prompted them to quit or reduce their drinking.
- There is a clear pattern of men in Alberta using substances at higher levels than their counterparts in B.C. or Canada, and of men in Alberta using substances at higher levels than women in Alberta. Yet, on almost all indicators, pregnant women in Alberta demonstrate lower levels of alcohol consumption than pregnant women in B.C. or Canada. This suggests that Alberta women who are pregnant resist the influence of a provincial culture that accepts high levels of alcohol use, and that existing public awareness and education strategies are having an impact.

- We examined a range of other indicators descriptive of overall health status and improvements in health. These also provide a positive view of the health status and initiatives of pregnant women. For example, pregnant women in Alberta reported receiving high levels of social support, were more likely to obtain needed health care than either non-pregnant women or men, and were less likely than women in Canada or B.C. to report that health care was not available in their region.
- Pregnant women were much less likely than non-pregnant women to use psychotropic medication, in all categories except tranquillizers, perhaps indicative of the addictive properties of this drug category. Pain relievers were the licit drugs most often used by pregnant women in Canada (39% of women who were pregnant at the time of the survey versus 76% of those who were not).

Key Finding 2

A profile emerged of groups at higher risk.

Implication

Because broad public campaigns demonstrate less effectiveness for at-risk groups, targeted campaigns are needed.

Examples

- High-risk drinking: There is a group of women who use substances in patterns that have been identified as especially risky for fetal and maternal health. Regarding drinking behaviour, the identified at-risk groups are those who drink heavily (more than nine drinks per week), binge drink (five or more drinks per occasion), and/or are alcohol dependent.
- Pregnant women who use substances: Although most women do not use substances during pregnancy, findings from our sources suggest that, in Alberta, 4% to 10% of women drink during pregnancy, around 16% smoke and 1.5% use street drugs. This suggests that approximately 10% (3,700) of the children born in Alberta each year *could* be compromised by maternal substance use.
- Using tobacco *and* alcohol: Those who drink more frequently are more likely to be smokers. Women who both smoke and drink alcohol are more likely to deliver a low-birth-weight and or preterm baby than mothers who only smoke.
- The Environics study found that women who consume relatively greater amounts of alcohol are less likely to believe that alcohol use during pregnancy is harmful. Thus, the identified at-risk groups are not reached by current public awareness campaigns, suggesting a need for more targeted campaigns.

Indicated Prevention: Windows of Opportunity with High-Risk Women

Key Finding

High-risk women face problems considerably more complex than substance use alone (e.g., violence, poverty, housing).

Implication

Specific, focused support is needed for those women who present with a constellation of other factors that interact with substance use to compromise their own and their children's health.

Examples

- The statistics strongly suggest that women who *can* quit using substances during pregnancy generally *do* quit, and others reduce their consumption. However, data presented here support clinical experience and the relevant literature, which suggest that there is a small number of women who present with substance use issues, combined with a constellation of other health, social and economic problems that make it more difficult for them to change their substance use behaviour during pregnancy.
- Mothers who are in a high-risk category, including those who both use substances and exhibit other indicators of poor health, may account for an estimated 1% to 2% of births.
- These women are in need of intensive, long-term, holistic, harm-reduction-oriented programming to support change in these overlapping areas. For pregnant women who have not stopped or reduced risky substance use during pregnancy, specific focused support is needed. Outreach, mentoring, and specialized treatment options that consider the unique barriers and life challenges faced by women have solid support in the literature (Health Canada, 2001; Poole et al., 2001; Tait, 2000; Washington State Moms Project, 2002). Examples of programs already available in Alberta include First Steps (Catholic Social Services Edmonton), Enhanced Services for Women (AADAC), and Aventa Treatment Centre for Women.

Windows of Opportunity in Research

Key Finding 1

Information-gathering about substance use has limitations in its current forms, and leads to seemingly inconsistent results and underreporting.

Implication

Substance use agencies could work with survey developers and health-care providers to develop reliable, ethical, respectful and non-intrusive tools that would yield more accurate information to guide policy and practice.

Examples

- Reporting of alcohol use in all contexts is influenced by the social stigma associated with substance use by women, especially during pregnancy (Health Canada, 2001; Poole, 2003; Poole et al., 2001; Tait, 2000). Not all women are asked—and not all women feel safe—to report their use of substances in this climate.
- Women are less likely than men to answer survey questions regarding substance use. This is especially true of pregnant women. For example, in reporting the number of drinks consumed in the past week, approximately 20% of women did not answer the question. The percentage of women who were pregnant at the time of the survey and did not answer was closer to 30%; by comparison, only about 15% of men did not answer.
- Methodological variations across jurisdictions, surveys and information-gathering protocols make it difficult to get a clear picture of the prevalence of substance use by pregnant women. In monitoring the frequency of use among pregnant women, we are currently limited to three measures (drinking during last pregnancy, drinking in past 12 months, and notice of birth), and each has a unique set of problems related to time frames, self-reporting, and/or method of administration.
- Substance use agencies could work with national and provincial survey initiatives to improve the type and quality of survey data collected on substance use by pregnant women. For example, U.S. surveys have questioned pregnant women on use in the month prior to the survey. This time frame, rather than the past week or the past 12 months, might be more useful in national Canadian surveys as well.
- While large surveys provide valuable information, a significant amount of relevant information is also gathered within the health-care system. A commonly used source of information on substance use and pregnancy is the information obtained when babies are born. It is widely believed that this source yields conservative estimates of the frequency of substance use during pregnancy. Working with physicians and other health-care providers to collect such sensitive information in routine, supportive and non-judgmental ways might improve confidence in this information.

Key Finding 2

There is an ongoing need for qualitative and quantitative information on women, substance use, and related health and social issues.

Implication

A well-rounded research agenda is likely best facilitated by a research network that brings together resources and expertise.

Examples

- Population health surveillance is increasingly used to help set policy and practice directions, especially in prevention efforts. An update of this report after each round of the *Canadian Community Health Survey* would enhance access to up-to-date information on the incidence, prevalence and epidemiology of women's substance use in Alberta.
- Clinicians and policy makers have prioritized a need for research that investigates the *qualitative* experience of the context surrounding women's substance use, especially as it relates to motherhood, pregnancy and substance use.
- Two new research initiatives bode well for research in this area: the establishment of the *Alberta Centre for Child, Family and Community Research*, whose primary mandate is research on FASD; and the Canada Northwest FASD Partnership's cross-government *Research Network*, with a particular focus on prevention of FASD.

Summary

This report presents a statistical profile of substance use among Alberta women of childbearing years (ages 18 to 44), supplemented by other health-related information that contributes to our understanding of women and substance use. Researchers reviewed data from national surveys/reports and perinatal databases to prepare a profile that compares rates of men with those of pregnant and non-pregnant women in Alberta, B.C. and Canada. The information presented in this report has implications for policy and practice related to women and substance use across Canada.

A key point reminds us that women already make positive efforts to protect their health and the health of their children, and we are challenged to find ways to enhance this effort. Other findings direct our attention to some important hidden groups (such as women with higher incomes, older and younger women), and to the importance of addressing the social support needs of the women we serve.

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Appendix 1

	Sheway, Vancouver 1998 clients	Breaking the Cycle, Toronto 1995–2000 clients	Tait, Manitoba 2000 research	Aventa, Calgary 2002 pregnant clients	First Steps, Edmonton Nov '99–Aug '02 clients	MOMS Project, Seattle 1991–1994	California Perinatal Services Network
	n=113	n=197	n=74	n=37	n=57	n=365	n=15,300 (not all pregnant)
Age							
Average age (min 15 max 42)							29.3%
under 21		11%	8%	19%	19%	11%	3.0%
21-25		18%	30%	59%	70%	35%	20.0%
26-30		25%	35%			24%	
30+		46%	27%	22%	11%	30%	
Marital Status							
married		8%		8%	11%	9%	
not currently married		35%		46%	9%	29%	
never married		57%		46%	81%	64%	
Income							
Income source at intake = Social Assistance	73.5%		41%	32%			
Had no income at intake (needed advocacy)	15.0%		3%	43%			
Below poverty line		95%	78%				
Aboriginal status							
Of Aboriginal descent	59.3%				66.7%	6%	3%
Other women of colour					1.8%	40%	27%
Children							
Had children living with at intake	27.4%	66%		68%			
Previous children in care at intake	30.1%	42%					
Previously opened Ministry files at intake	37.6%			41%			
Mother had foster care history		85%	33%		64.9%		
Education							
Less than high school completion		93%			91.2%	43%	48%
High school/GED					8.8%	30%	39%
College/university						25%	14%
Employment Status							
Not currently employed		93%	86%				93%
Housing type at intake							
No fixed address	6.2%	2%					
Hotel or shelter	21.2%	21%					
Apartment or house	64.6%	77%					
Week gestation at intake							
In first trimester	44.3%	27%					
In second trimester	29.5%	35%					
In third trimester	26.1%	39%					
Average number of pregnancies per client	3.5	4					
Average number of live births per client	2.5	2.1					

	Sheway, Vancouver 1998 clients	Breaking the Cycle, Toronto 1995–2000 clients	Tait, Manitoba 2000 research	Aventa, Calgary 2002 pregnant clients	First Steps, Edmonton Nov '99–Aug '02 clients	MOMS Project, Seattle 1991–1994	California Perinatal Services Network
	n=113	n=197	n=74	n=37	n=57	n=365	n=15,300 (not all pregnant)
Key coexisting problems at intake							
No local friends/family support	8.8%	19%					
No medical care	31.9%						
Identified housing concerns	64.5%						
Identified nutritional concerns	79.4%						
Identified substance use	77.6%		84%			severe 89%	
Identified violence concerns		physical 82% sexual 70%		physical 78% sexual 70%			
Legal problems		38%			ever charged 82.5%		
Previous incarcerations						18%	
Number of children at intake							
No children		5%				22%	
1-2 children		56%			Avg 2.4	51%	
3+ children		39%				27%	
Referral source							
Self	44.9%	4%				26%	
Family or friend	12.1%	2%					
Health professional	29.0%	12%				18%	
Other professionals and community services	4.7%	14%				8%	
Criminal justice system		3%				19%	21%
Public assistance/ child welfare		32%				19%	
Addictions field		32%				5%	
Substance use							
Cocaine as 'd.o.p'		*49%	20%	27%	*52.6%	46%	25%
Alcohol as 'd.o.p'		34%	67%	68%	69.0%	27%	20%
Heroin as 'd.o.p'					3.5%	16%	11%
Marijuana as 'd.o.p'			7%		47.0%	11%	7%
Smoker/Nicotine as 'd.o.p'		93%		89%	89.5%		
Prescription drugs				5%	14.0%		
Over-the-counter drugs		14%					
No previous treatment		18%				30%	
Family substance use		~70%	59%				
Coexisting health problems							
Mental health problems				35%	39.0%		
Hepatitis C				14%			

* For Breaking the Cycle clients, includes crack 39% and cocaine 10%, and drug of problem ('d.o.p.') equals primary addiction

* For First Step clients, drug of problem is defined as 'used during first trimester'

Alberta Alcohol and Drug Abuse Commission
An Agency of the Government of Alberta

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